DESIGN AN EXPERIENCE
LINKING ARCHITECTURE WITH EMOTION

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MASTER`S DEGREE IN ADVANCED STUDIES
IN DESIGN-BARCELONA(MBDESIGN)
CONTEMPORARY DESIGN

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ABSTRACT

In the context of the loss of contemporary Chinese architectural education and the crisis of architectural formalism, this paper explores the methodology of architectural design. The author combines philosophy, aesthetics, psychology and other related "space emotions" theory to conduct data measurement and architectural design theory based on individual experience.

Emotions are subjective, but the data on the architectural experience is objective. The author explores the architectural space and combines the design to understand the emotional elements of the architectural space. At the same time, the AI camera recognition technology is adopted, and the spatial sequence design strategy based on emotion guidance is adopted to demonstrate the relationship between the experience and the perceptional elements of architectural art, and to construct the measurement experience framework of the system.

Keywords: experience, emotional guidance, architectural form, emotion recognition, the design method

绪　论

本文是一篇关于建筑设计方法论的探求，是基于作者对当代中国建筑教育的迷失与建筑形式主义的危机的批判，对哲学、美学、心理学等相关“空间情感”理论学习总结，结合数据测量，设计，建构以个体体验为主的建筑设计理论。

情绪是很主观的数据，但建筑体验有其客观性，作者通过探索建筑空间时空性，结合设计理解建筑空间的情感元素，运用AI摄像头识别技术，提出基于情感引导的空间序列设计策略，论证建筑艺术的体验与知觉元素之间的关系，建构系统的建筑体验测量框架。

关键词：体验，情感引导，建筑形式，情绪识别，设计方法

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Thanks for all your encouragement!

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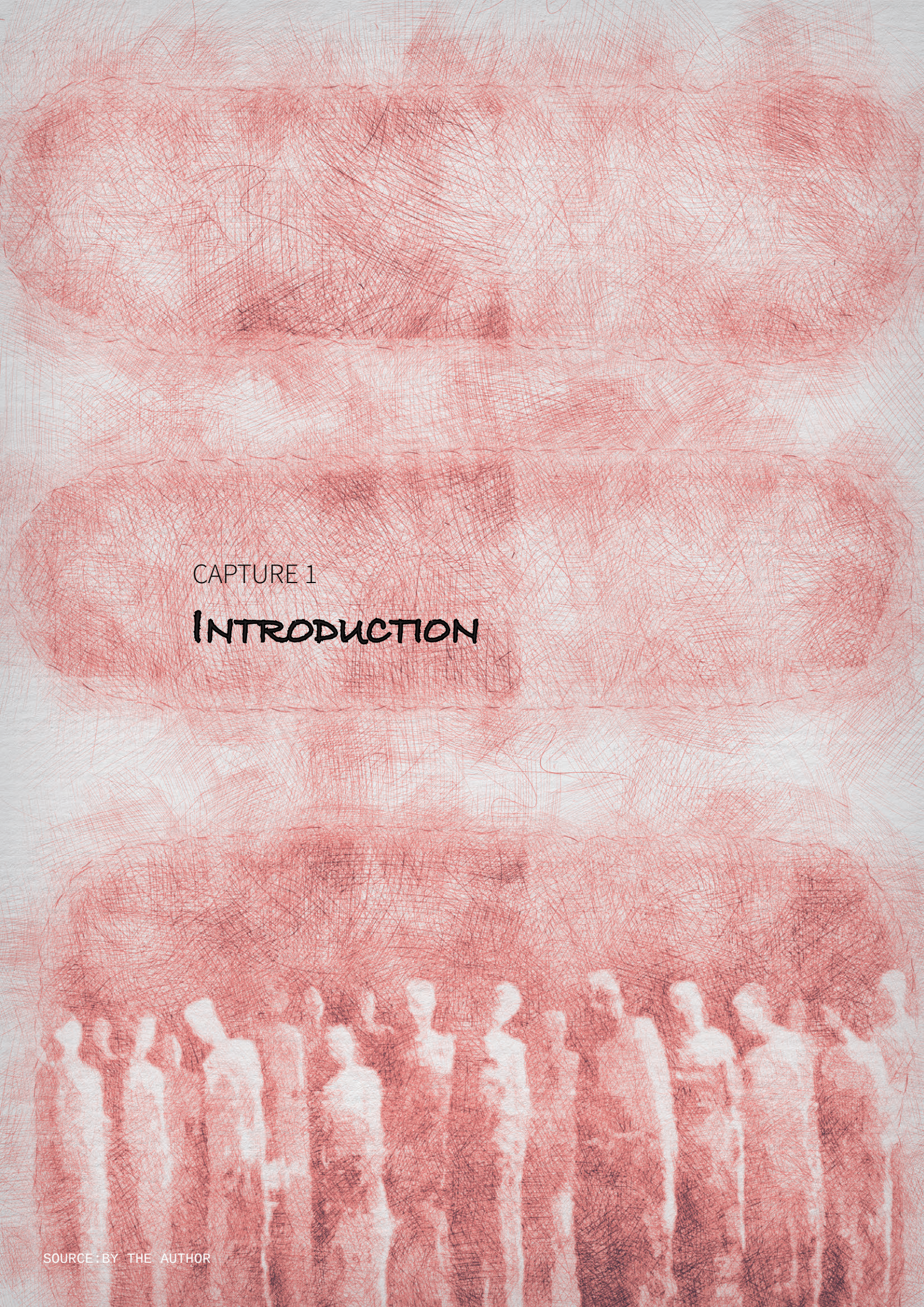
Introduction



SOURCE:BY THE AUTHOR

1 INTRODUCTION

RESEARCH BACKGROUND

LOST IN CONTEMPORARY CHINESE ARCHITECTURAL EDUCATION

Alexander Tzonis once mentioned that the entire world is continuously discussing architectural education. One of the main issues behind it is: we are experiencing unprecedented changes, whether on scales or categories. Perhaps we can call it "new environment," in which overpopulation, resource depletion and increasing pollution have been besetting us. At the same time, we can benefit from unprecedented technological innovation, a vibrant economy and the well-developed transportation system.[1] Did our architecture schools provide the right lessons for students who are going to engage in design and construction activities?

China's economy has developed rapidly and the urban area has expanded markedly, which leads to the rapid expansion of the building's volume. The repeated bombardment of a large amount of information and the social psychology of pursuing efficiency have jointly influenced the design industry. This also impacts the entire system of architectural education. In order to provide the market with abundant cheap labor, higher education has a non-healthy expansion. Therefore, the teachers are mediocre and the teaching methods are limited. All of this is to meet the high-speed urban development and construction, and accelerate the cultivation of architects has become a tool for commercial capital. Students should have learned about "feelings", but they learned "methods" instead.

On the one hand, young people who want to become "design masters," and on the other side, teachers who pursue hard scores such as teaching

1 TZONIS, Alexander, 2014. Architectural education at the crossroads. Frontiers of Architectural Research [online]. March 2014. Vol. 3, no. 1, p. 76–78.

evaluation results and "employment rate." Also, there is the background of the information explosion era and the information that students receive in their environment is not equal. All this has led to the loss of Chinese architectural education.

THE CRISIS OF FORMALISM

Architectural design has always underlined the importance of architectural functionalism while considering rational function, scientific structure, real materials and exquisite technology as the main aesthetic features of modern architecture. In *The Modern Language of Architecture*,[2] Bruno Zevi believed that function is the origin of modernism against classical architectural language and that the principle of design according to functional requirements, is above all other principles. The functional principle of designing is that the universal basis of modern language is above all other principles. However, in fact, both in theory and in expression, modern architecture has been significantly influenced by formal aesthetics from beginning to end. Modern architecture may pursue pure forms, rich syntax, neutral styles, or abstract structures. They also tend to pursue a formal system. This formal system is a time-space, super-social neutral gap, consciously.

British formalism representative Clive Bell believes that the essence of art is a "Significant form." In the case of visual art, "form" refers to the relationship between lines and colors arranged in some way.[3] This purely formal relationship excludes the meaning of indications that may appear in formal form and excludes information records that convey real-life content such as enlightenment and enlightenment.

The study of architectural experience is influenced by modern aesthetics, especially formalism, structuralism and linguistics. Modern architecture tends to pursue a self-sufficient structure and a generally neutral architectural style in aesthetics. It develops various architectural forms based on some abstract formal logical relationships, bringing the architectural design to the path of formal development. We can look at the design of outstanding architects such as OMA and BIG. Their designs have shocking forms and simple, powerful images, but can they touch human thoughts?

RESEARCH ON ARCHITECTURAL EXPERIENCE

The Experiencing Architecture (1962) written by Steen Eiler Rasmussen is an earlier work in the research related to architectural experience. In his book, he discussed the re-examination of various elements of architecture and its methods of organization based on the subjective feelings of human beings. Later, Willard Moore I Kent C. Bloomer, published *Body, Memory, and Architecture* in 1977, which is a

2 ZEVI, Bruno, 1994. The modern language of architecture. Da Capo Press. ISBN 0306805979.

3 BELL, Clive, 2012. Art. [CreateSpace]. ISBN 1461075203.

systematic monograph in this field. The book cites Gibson's sensory system theory and examines in detail how the various perceptual systems of the human body play a role in the architectural experience, emphasizing the importance of other perceptions to the architectural experience in addition to vision. The architectural phenomenology that emerged in the middle and late 20th century systematically studied the architectural experience and perception and explored it through design. Christian Norberg-Schulz's place theory is the first to use the phenomenological philosophy to study architectural phenomena. This theory reveals the relationship between human behavior and location characteristics. *Existence, Space and Architecture* (1971) pointed out that the existence of space is a relatively fixed spatial perception schema, closely related to the place. In an early study, American architect Steven Holl focused on exploring the formation of the spirit of the building, and he elaborated on this point in his design practice in *Anchoring* (1989). After Holl began to study architectural phenomenology, the focus of his research shifted from "places" to architectural perception and experience. In *Parallax,* published in 2000, the author combines a large number of architectural practices to explore and study architectural perception theory. In the book *The Eyes of the Skin: Architecture and the Senses* (1996),the famous Finnish architect Juhani Pallasmaa also comprehensively analyzes and discusses the content of architectural perception, especially the neglected perceptions such as touch and smell.

The architectural experience is closely related to the most basic survival experience. Explaining the meaning of the architectural experience from an anthropological perspective is part of the architectural experience research. In the Epic *Space: Toward the Roots of Western Architecture* (1992), Anthony C. Antoniades has explored the ancient experience on the space based on spatial descriptions in ancient Greek, Roman, Nordic, and Indian epics. In *Origins of architectural pleasure* (1999), Hildebrand G classifies the pleasant architectural experiences from the perspective of aesthetics of life, classifying them into vision and shelter. Moreover, the author also analyzes the anthropological foundations of these experiences and their use in architectural design with a large number of architectural examples.

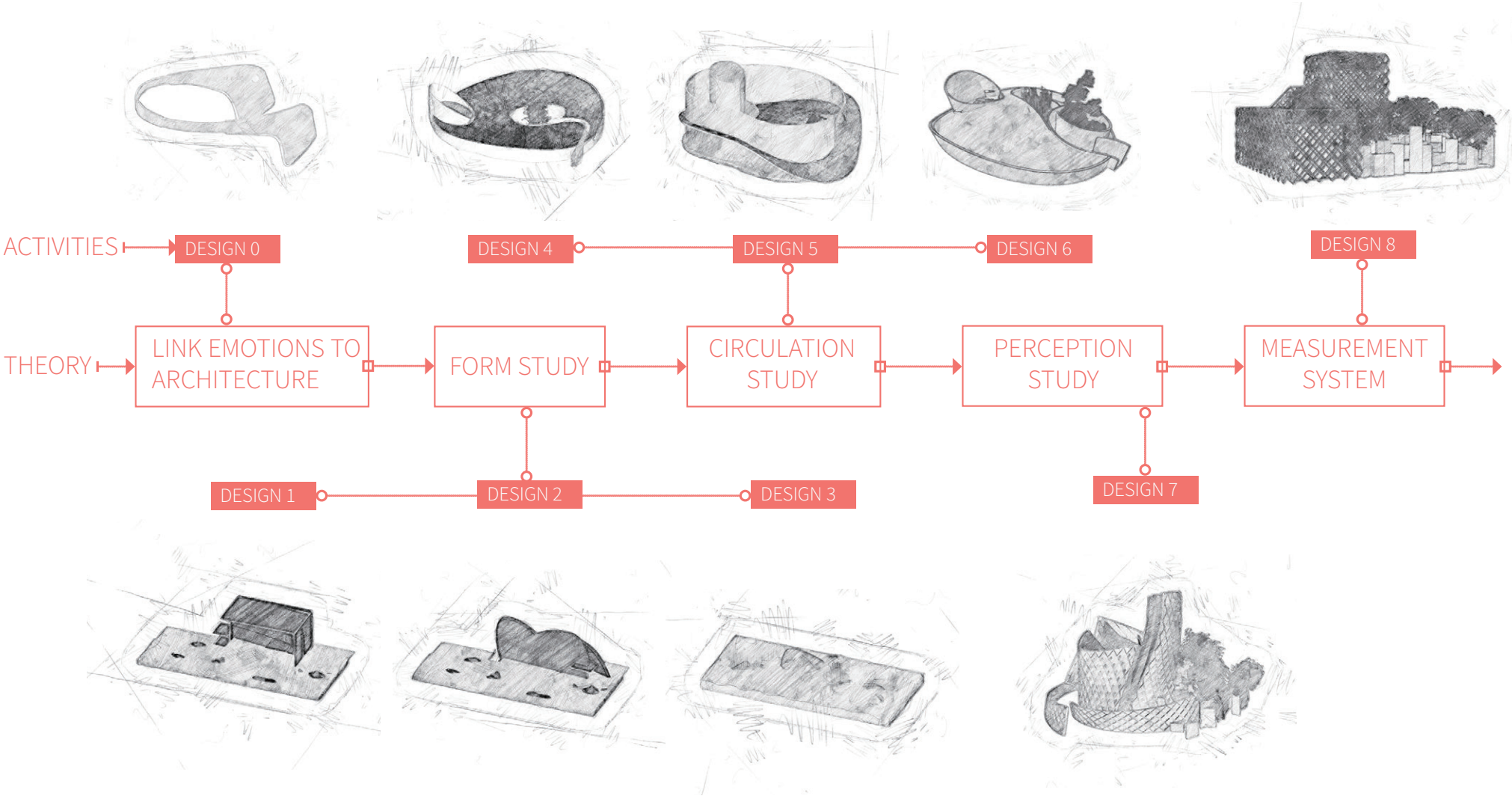


FIG. 1.1 RESEARCH METHODOLOGY DIAGRAM
SOURCE:BY THE AUTHOR

CAPTURE 2

Bodies without souls

SOURCE:BY TH EAUTHOR

2.1 DREAMING OF BEING AN ARCHITECT

"If you are not from one of the National Key Universities, you can hardly be a star architect, so please feel comfortable to develop ordinary designs and don't have bizarre ideas."(FIG. 1.2)

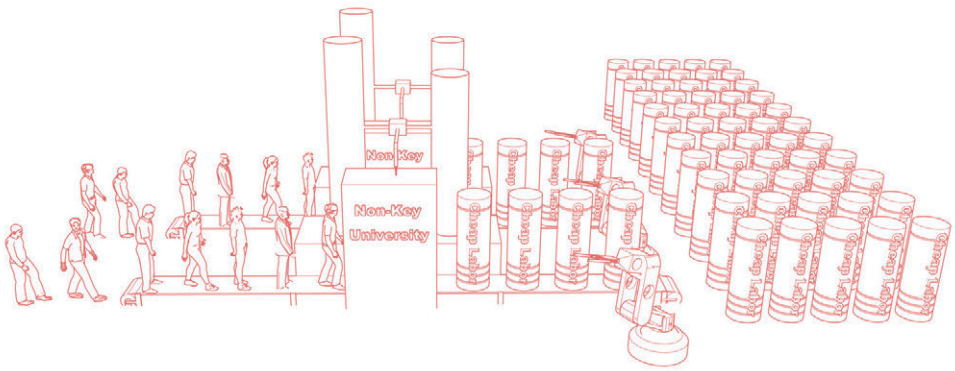


FIG. 1.2 CHINESE UNIVERSITY FACTORY
SOURCE:BY THE AUTHOR

MY BORING DESIGN

A joint session on the last semester really made me sad. In that session, Professor Roca asked me why I believe the design of my classmates is better than mine. My mind went blank when she asked me. I even don`t know why I think their work is better than mine. Why do foreign students appear to be more creative than me?

After a few minutes, I suddenly blurted out, " Emotion, professor, is emotion." Ten years ago, I transferred to be an architect when I was 27 years old. " If you are not studying in one of the National Key Universities, you can hardly be a star architect, so please

FIG. 1.3 SCHOOL DESIGN IN SHENZHEN
SOURCE:WWW.SZXUEXIAO.COM

feel comfortable to develop ordinary designs and don't have bizarre ideas," said by our dean at our first school day.

Some of my teachers are incredibly conservative. Since they held a rather realistic thought, they would not want a student to produce audacious works, so what they taught us was how to design "boxes". They assumed that the market only needs designers who receive low salaries and do what the businessmen want. Also, this kind of value is not only spreading in my university but also eroding the entire society. I spent my early working years in a design team, in which I have to try my best to meet the commercial aesthetics of our boss hoping to make a good profit. It is not hard to infer many projects of school design in Shenzhen sharing many similarities(FIG 1.3).

Sometimes I felt that the obstacles I faced when expressing my emotions came from what kind of atmosphere I lived in and what tool I used to obtain information.

Dreaming of being a star architect, a profession calls for emotions,I need to look for the emotions I lost. Then I was able to find what was wrong with my earlier designs - they were too dull, too boring. This kind of boring did not lie on their shapes and forms, but their spaces. The spaces inspired no words and stories, let alone emotions.

2.2 IT IS EMOTION

FIG. 2.1 GIOVANNI BELLINI ST. MARK PREACHING IN ALEXANDRIA
DATE: 1504 - 1507
SOURCE:WWW.WIKIART.ORG

EMOTION IN ART

The definition of "emotion" in the Oxford Dictionary is 'A strong feeling deriving from one's circumstances, mood, or relationships with others.'[4]

Emotion is a crucial element of everyday social interaction. However, there is a sustaining debate over the word "emotion" .

The Greek philosopher Aristotle believes that ' Emotions are the things on account of which the ones altered differ concerning their judgments, and are accompanied by pleasure and pain: such are anger, pity, fear, and all similar emotions and their contraries.'[5]

If you go to the art gallery to appreciate

4 EmotionIn: Wikipedia [on line]. Wikimedia Foundation, 2019

5 RORTY, Amélie., 1996. Essays on Aristotle's Rhetoric. University of California Press. ISBN 0520202287.

the paintings, you will find more people interested in Impressionism and the later works. Many people think that classical art(FIG. 2.1) is challenging and boring to appreciate, aside from the incomprehensibility of the theme of classical painting. We may be able to discover why classical art is so difficult to touch our feelings in terms of the purpose of painting. The earliest painters were more like technical workers. They worked for dignitaries. Their paintings were not to represent the artist's subjectivity or the objectivity of the objects being painted. They learned the complex technique of painting to make their paintings more valuable. This is somewhat similar to some cases of bizarre architecture in China. As long as them looks very valuable, soul or meaning will give way to them. The rich viewed them from a perspective no different than what they viewed things like gold, silver, and diamonds. The Impressionist and artists of the later painting genres integrated their emotions with their works since there was no need for them to please their boss.

Taking Munch's paintings(FIG. 2.2) as an example, we found the strong touch of death and love in the depths of the soul in his works. Munch's body and mind were afflicted by the uneasy,

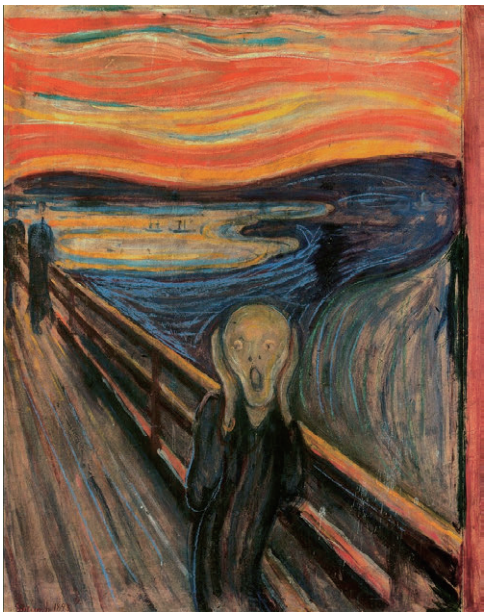


FIG. 2.2 EDVARD MUNCH,THE SCREAM
DATE: 1893; OSLO, NORWAY
SOURCE:WWW.WIKIART.ORG

anxious and fearful and painful feeling. These feelings penetrate his whole life. Munch's unique technics represented the sharp side of ordinary life to the audience. He was not so sharp as real. Munch's picture touches the most fundamental things of humankind: One is love; another is death.

2.3 DESIGN 0:LINKING EMOTION & SPACE

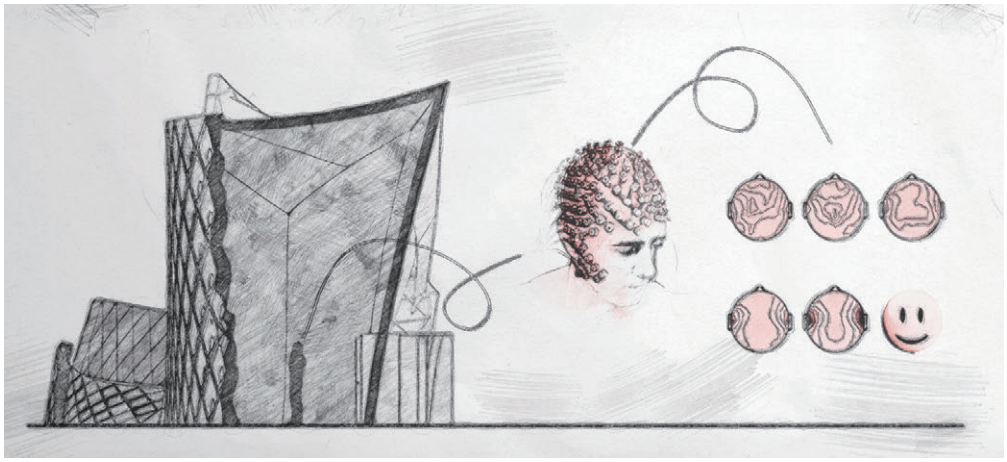


FIG. 2.3 THE CONCEPT LINKING ARCHITECTURE WITH EMOTION
SOURCE:BY THE AUTHOR

EMOTIONAL MEASUREMEN

These days I am thinking, how can I quantify the emotions from the visit? If I can quantify their feelings, then I can measure the impact of space on people. At this time, I read an article *emotional design in architecture* by IAAC students.

They used EEG[6] devices to measure the emotions of visitors in some buildings.It made me so exciting that I thought I have found a good way to evaluate the emotions I needed(FIG.

6 Electroencephalography (EEG) is an electrophysiological monitoring method to record electrical activity of the brain. Clinically, EEG refers to the recording of the brain's spontaneous electrical activity over a period of time, as recorded from multiple electrodes placed on the scalpDerivatives of the EEG technique include evoked potentials (EP), which involves averaging the EEG activity time-locked to the presentation of a stimulus of some sort (visual, somatosensory, or auditory).

FIG. 2.4 EMOTIONAL DESIGN IN ARCHITECTURE:IMPACT OF SPACE ON MOODS AND BEHAVIOR
SOURCE:WWW.IAACBLOG.COM,COURTESY BY RICHARD AOUN

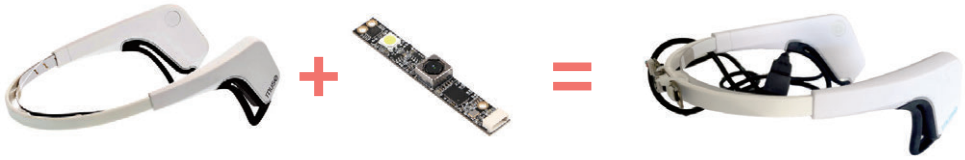


FIG. 2.5 DESIGN 0 CONCEPT
SOURCE:BY THE AUTHOR

2.3).This experiment of IAAC(FIG. 2.4), in my opinion, has some flaws. Every experimenter of this experiment had an operator who held a computer behind them. Such a follower would have a psychological impact on visitors. What's more, the data of the EEG device was calculated in milliseconds. How do they know if the values they measured were matched the element which they thought to have evoked visitors' emotion?

With this question, I am wondering if there is a better solution. First of

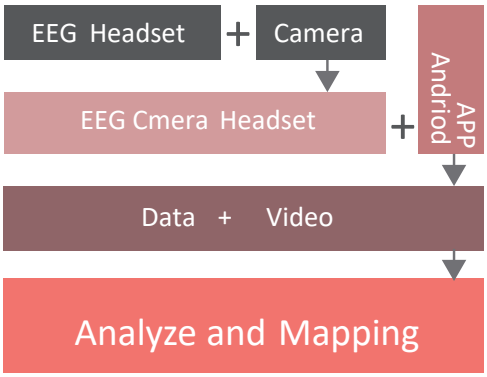


FIG.2.6 DESIGN 0 WORKFLOW
SOURCE:BY THE AUTHOR

all, I hope there is no follower stand behind the experimenter. Second, the viewer's perception must correspond to the data. I am looking for such a

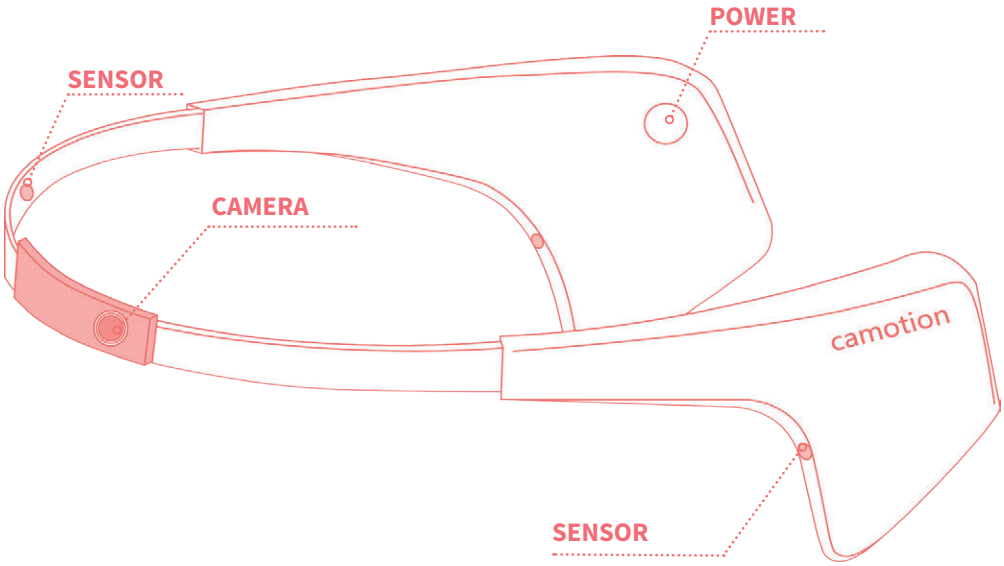


FIG.2.7 DESIGN 0 DRAWING
SOURCE:BY THE AUTHOR

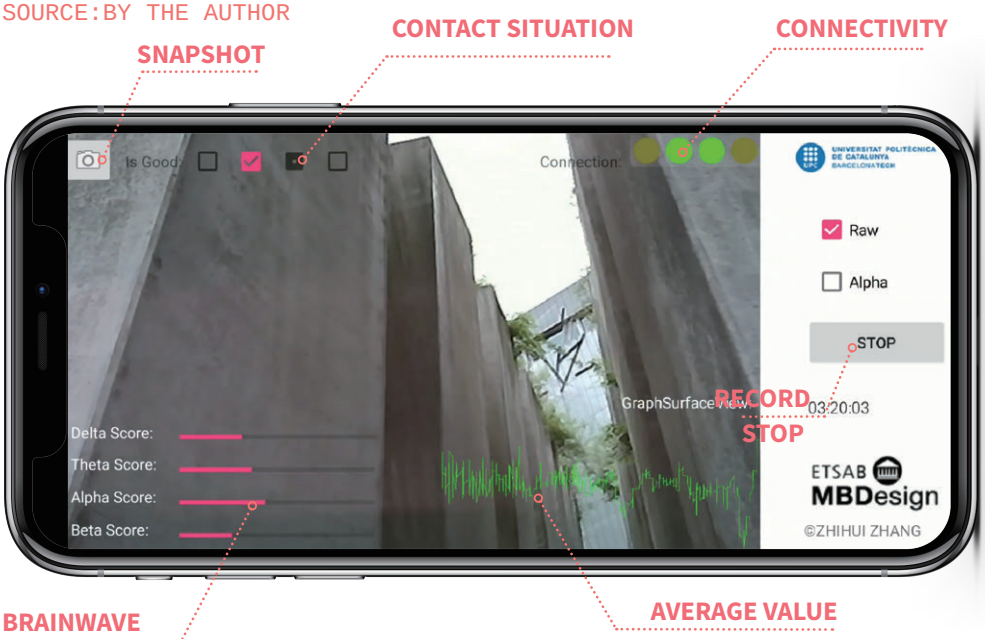


FIG.2.8 DESIGN 0 APP
SOURCE:BY THE AUTHOR

device online, but unfortunately, no such a device that can be purchased directly. So, I decided torecord the data through cellphone. Then the experimenter can carry their phones without the following observers. We now raise another question: how do we match the specific data with what the visitors see at that time? Accordingly, I was wondering if it is possible to add a camera on this device so that I can link the data to what the visitors see(FIG. 2.5).Therefore, I combined the EEG headset with a camera. This design helped the data captured by the headset to overlie on the video caught on the camera(FIG. 2.8). Now, with this design(FIG. 2.7), I have good

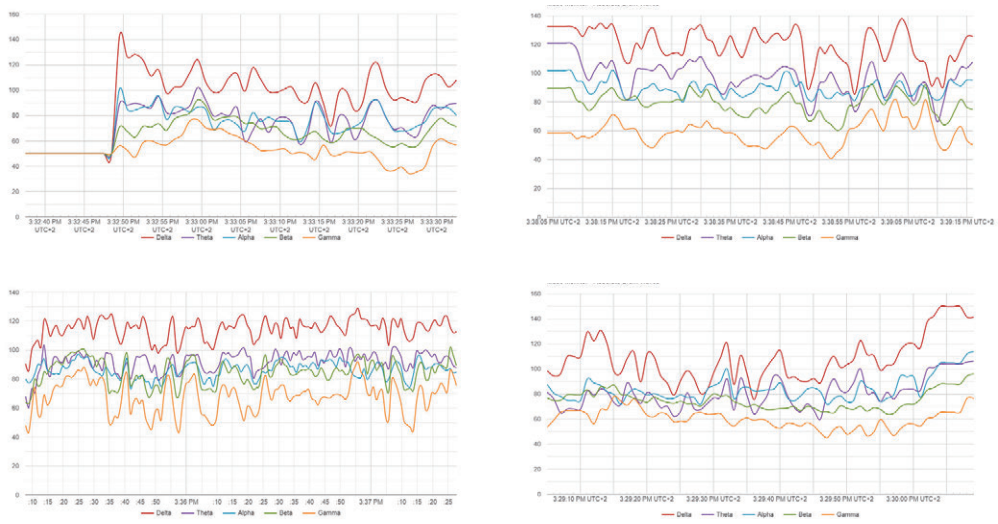


FIG.2.9 DATA COLLECTED FROM MUSE HEADSET
SOURCE:BY THE AUTHOR

In \ Out	Joy	Anger	Sadness	Fear	Relax
Joy	58.3	16.7	16.7	0	8.3
Anger	16.7	33.4	8.3	8.3	33.3
Sadness	33.3	0	25.0	16.7	25.0
Fear	0	8.3	25.0	41.7	25.0
Relax	8.3	16.7	8.3	16.7	50.0

FIG.2.10 EMOTION RECOGNITION RESULTS USING SVM [%] (1 SENSOR: EEG)
SOURCE:REMARKS ON EMOTION RECOGNITION FROM BIO-POTENTIAL SIGNALS

remedy to the deficiencies of the IAAC experiment, so I can get the result of synchronizing the data with the image.

In the beginning, I was pleased when I was able to complete the prototype of this design, but when I started to record and analyze the data(FIG. 2.9). I found that maybe EEG did not reflect a person's emotions, so I tried to search for articles on how to analyze EEG data. I found a severe problem in the *Remarks on emotion recognition from multi-modal bio-potential signals*[7] written by Takahashi. The accuracy of EEG is only 41% in the experimental phase(FIG. 2.7).We can divide emotions in the chart into two categories: positive (Joy, Relax) and negative (Anger, Sadness, Fear). The data in the table showed that when the test was angry, the EEG data were similar in positive and negative categories (Anger: 33.4, Relax: 33.3) Moreover, when the test was sad, the EEG data of one of the positive lines (Joy) were even higher than the negative ones.

This EEG device seems high-tech and eye-catching. This device, however, was incredibly unreliable as a measure of emotion. So, I was confused again. Should I give up my EEG headset?

7 TAKAHASHI, K., [no date]. Remarks on emotion recognition from multi-modal bio-potential signals. In: 2004 IEEE International Conference on Industrial Technology, 2004. IEEE ICIT '04. [online]. IEEE. p. 1138–1143. [Viewed 13 June 2019]. ISBN 0-7803-8662-0.

2.4 CASE STUDY -LES COLS PAVILIONS

FIG. 2.11 PATH,2019
SOURCE:BY THE AUTHOR

TO EXPERIENCE IT

When I realized that my EEG headset could not be useful, I was extremely depressed. Did my previous work be useless? At this time, I was helpless and anxious; I could not find an exit. Professor Josep Maria told me that my purpose is to drive the nail. If the hammer is not working well, I can change another tool. What I should do is to drive the nail instead of making a gold Hammer. I was enlightened all of a sudden, and it reminded me of my goal - to find a link between architecture and emotions. So, I decided to look for some constructions that would evoke the emotions of visitors and try to get some inspiration from them.

It was a two-hour drive from Barcelona to the Les Cols Pavilions. When I parked the car, the service staff had already waited at the door. When we took the baggage and brought it into the hotel, we went to the wrong door. At first, I thought the right door was the entrance to the hotel, but the entrance was a doorway on the left.

FIG. 2.12 PASSAGE,2019
SOURCE:BY THE AUTHOR

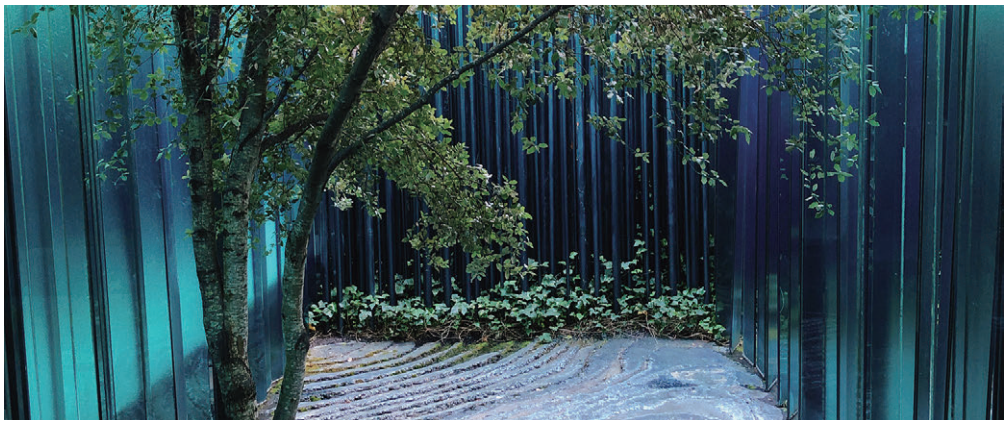


FIG. 2.13 COUNTYARD 2019
SOURCE:BY THE AUTHOR

There was a macadam pavement led to a low-light room with a black cube in the middle as a workbench. The waiter was standing here and helped us check in. In the small door next to the entrance, there is only a push-pull iron plate at the waist of the door, acting as a barrier. The waiter led us walk through a small path （FIG. 2.11） into a metal mesh passage （FIG. 2.12 ） . My room was the first room on the left hand of the passage. The room door is very heavy. There is a small courtyard （FIG. 2.13） inside the room. It is beautiful and has a feeling of autumn.

MINIMUM FUNCTION

The room was made by glass(FIG. 2.14), I was worried about the lack of fresh air and the increasing heat. Fortunately the temperature was nice when the air conditioner was on. There was only one bed in the bedroom and nowhere for me to place my laptop and luggage. At first, I wanted to make some notes in the room and surf online, but soon I know it was impossible to work here. It seemed that this room was only designed for having a rest and not for work. After a short break, I wanted to take a bath. The bathtub was designed to have a sunken, endless edge. It was next to the shower in the end of the

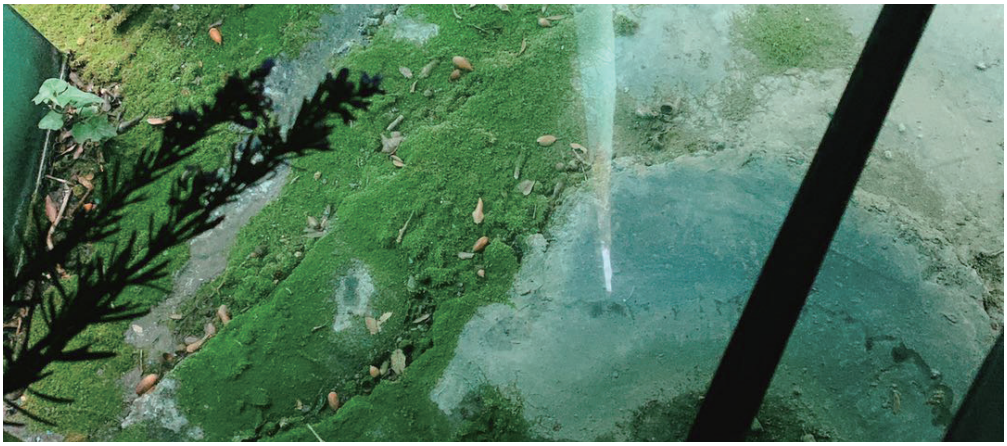


FIG. 2.14 UNDER THE GLASS 2019
SOURCE:BY THE AUTHOR

FIG. 2.15 BEDROOM 2019
SOURCE:BY THE AUTHOR

bathroom. The floor of the shower were paved with stones, it made my feet very painful. The design was too succinct that the bathroom does not have any room to keep items and clothes. I usually play mobile phones while taking a bath, but I couldn't do that here. I can only concentrate on one thing. The sink (FIG. 2.17) of the room can't fill a cup of water and can only wash your hands and The function here is not as good as that of the average hotel.

EMPTY YOUR CUP

Due to the loss of a lot of convenience in the daily life, such as no more bedside socket to charge my phone. And I can only concentrate on showering and listen to the natural sound. Without internet connection
to keep up on news of friends, I can only calm down to accompany myself. In this room (FIG. 2.15) , there is a sense of living in nature, or a cave. I began to reflect on whether some functions in daily life are really necessary for me or not. Here is an opportunity to be isolated from the city,

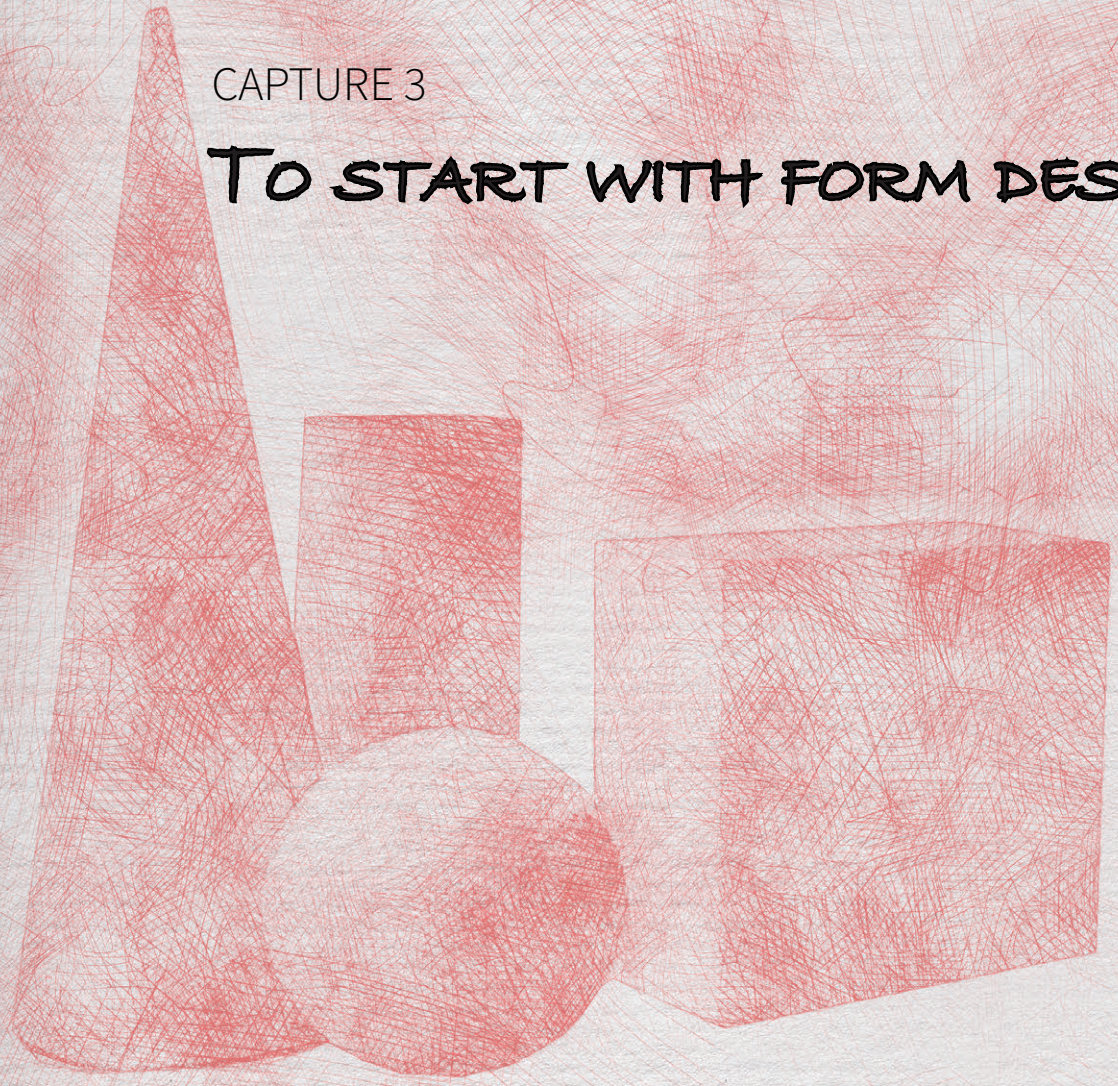
FIG. 2.16 GARDENT 2019
SOURCE:BY THE AUTHOR

FIG. 2.17 DIFFICULT SINK TO USE 2019
SOURCE:BY THE AUTHOR

so that you can take good meditation. If you do not regard this place as a fully functional room, but a treatment room to repress your desire, then it will truly works. But if you are drinking a cup of coffee and suddenly want to drink a cup of coke instead, you can't pour the coke directly into the coffee cup before you empty it. Therefore this pavilion doesn't make sense.

CAPTURE 3

To start with form design



SOURCE:BY THE AUTHOR

3.1 CASE STUDY:RYOANJI TEMPLE

ORIENTAL TRANQUILITY

"When we gaze into the darkness that gathers behind the crossbeam,around the flower vase,beneath the shelves,though we know perfectly well it is mere shadow,we are overcome with the feeling that in this small corner of the atmosphere there reigns complete and utter silence;that here in the darkness immutable tranquility holds sway."mysterious Orient"of Which Westerners speak probably refers to the uncanny silence of these dark places ."[8]

JUNICHIRO TANIZAKI, IN PRAISE OF SHADOWS ,1933

A PLACE FOR MEDITATION

The dry landscape garden of Ryoanji Temple(FIG. 3.1) in Japan is called "spiritual garden". The dry landscape garden is a unique landscape culture in Japanese garden landscape. It is widely used in small gardens. "Use sand instead of water and stone instead of an island" In the Ryoanji Temple without mountains and rivers, it shows the artistic conception of a landscape less painting in the form of tranquility and Zen. The dry landscape is not only a form of the Japanese garden but also a form of Japanese painting. The dry landscape is a miniature garden landscape made up of fine sand and gravel, plus some chic landscape stones. The layout of the dry landscape of Ryoanji Temple is quite simple. Its materials are streamlined, and only basic materials are used. The area is not wide and there is no complicated Arrange. However, its connotation has

8 TANIZAKI, Jun'ichirō, 1977. In praise of shadows. Leete's Island Books. ISBN 0918172020.

FIG. 3.1 KYOTO MAYO , RYOANJI,10-12-2015
SOURCE:SOURCE:KYOTOMOYOU.JP

humanistic color and Zen conception. The whole layout looks simple but implies more philosophical, so that visitors who come in are infected. In terms of layout, the dry landscape of Ryoanji Temple is divided into five groups of rock, it separates and balances the space, forming an overall situation of interlocking, dense and close, and appropriate. The wave shape simulated by the landscape sandstone also connects the whole picture together. Although its materials are simple and the materials are not much, it forms a harmonious effect of the combined form. It has the meaning of "less is more", which also coincides with the artistic conception of Chinese landscape painting.

3.2 DESIGN 1,2,3 :IMITATE THE FORM

FIG. 3.2 QIU YING, PINE CREEK TALK,XUAN PAPER PAINTING,MING DYNASTY
SOURCE:WWW.ARTWORLD.CN

COPY A QUIET SPACE?

I think the most common design method I use is to imitate something and then learn from it and design one. For example, I want to produce a design like the Ryoanji Temple. I may copy the form of it. Therefore, here, design 1, 2, 3 is the design concerning the form of Ryoanji Temple and ancient Chinese paintings.

Since I couldn't rely on the EEG data, I decided to give up the design 0 and to find the emotion I wanted through the architecture designs. My idea here is to design a tea room because I think tea can fully reflect the culture of the East. Moreover, the tea ceremony is always combined with the Zen, so I began to learn things about the tea ceremony in Japan and China. I found that the Japanese tea rooms value their essential forms, while tea rooms in China focus on experience.

In the ancient Chinese paintings, the tea space is just a table in the outdoor. (FIG. 3.2)

So my first proposal(FIG. 3.3 Design 1) was to create a platform for drinking tea in the mountains. When you see the platform, you will go through a sinking meditation space in which you can't see outside. Entering the platform will lead you to a room without light. Just like an island in the lake of a park, you can see it from a distance, but if you want to go there, you may need to go around

I usually beautify the hard lines to make it more eye-catching. In design 2(FIG. 3.3 Design 2) I transfer the platform into a mountainlike form.

In design 3(FIG. 3.3 Design 3) , I thought that if I didn't want to destroy this chessboard landscape, I should move down the platform and meditation space , and I need to put the path into it. The important thing might be how to arrange the visitor`s circulation, through the flow to control the emotions of visitors.

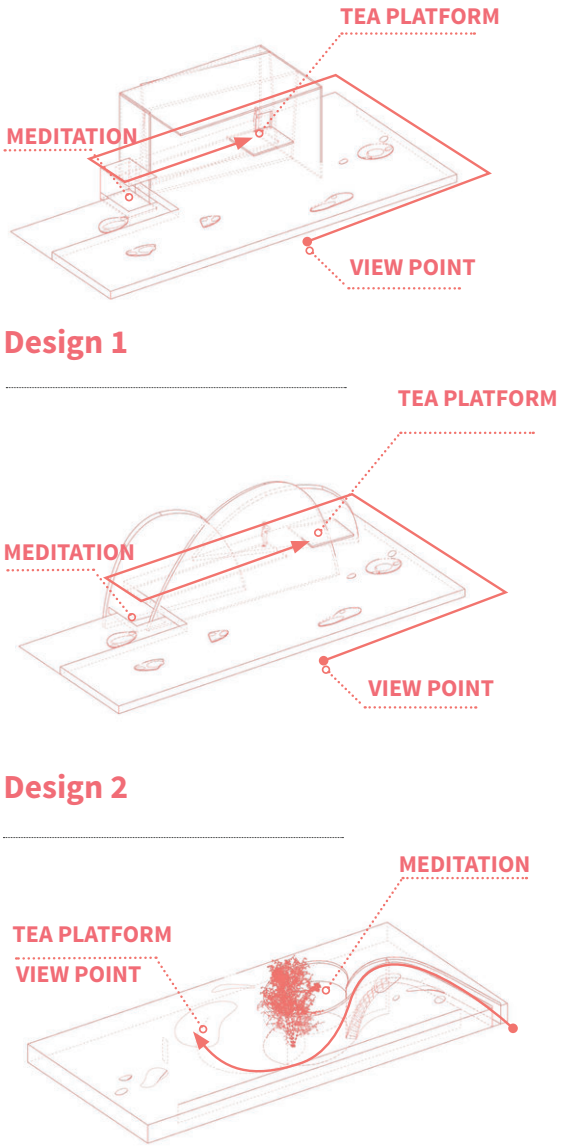


FIG. 3.3 DESIGN 1,2,3 DRAWING
SOURCE:BY THE AUTHOR

3.3 THE CRISIS OF FORM

WE JUST LOOK AT THE FORM

Designing a building is like designing a "sculpture" that is very similar in composition. “Composition” is also the core of architectural design. Whether it is the classical column of ancient Greece, the ancient Rome, the facade of the Paris Academy of Fine Arts, or the proportion of human body emphasized by Le Corbusier, it is difficult to get rid of the modeling method. A beautiful building itself is also a sculpture.

Kant regarded the aesthetic nature of architectural art as the first category of beautiful art. ‘To Plastic, the first kind of beautiful formative Art, belong Sculpture and Architecture. The first presents corporeally concepts of things, as they might have existed in nature (though as beautiful art it has regard to aesthetical purposiveness)’[9]

FIG. 3.4 *THE SEARCH FOR FORM IN ART AND ARCHITECTURE*
SOURCE:BY ELIEL SAARINEN

In his book(FIG. 3.4) *the search for form in art and architecture*[10], Saarinen believed

9 KANT, Immanuel and WALKER, Nicholas, 2008. Critique of judgement [online]. Oxford University Press. [Viewed 24 June 2019]. ISBN 9780199552467

10 SAARINEN, Eliel, 1985. The search for form in art and architecture. Dover Publications. ISBN 0486249077.

that form is part of human beings. It flourishes with the prosperity of mankind, and it declines with the decline of mankind. If architecture is evaluated through aesthetic perspectives, everyone should definitely pay more attention to its form. If you need a standard to judge an architectureperiod or mark an architect, I think everyone will choose to use the form as a standard. But the form is just the outer space of the building, and the building has its internal space. As Bruno Zevi said “Authentic architecture, Wright teaches, of the future, but also of the present and the past, affects, moulds, invents liveable human space, the ‘space per se’ at the service of the individual and the community. Space is not a mere ingredient of the shaping process of architecture. It is the filter through which all the elements and components derive their architectural legitimacy. A site, a place achieves its architectural identity only when it relates to the status of a space; otherwise it is just a character in search of an author. A plastic form is sculpture; it becomes architecture only if it is involved in the space (...). Space is the void, the artistically animated cavity, the negativity of the building transformed into the most poignant and creative action"

Bruno Zevi put forward that commenting on architectural space cannot be like commenting on painting and sculpture. He emphasizes that space is the protagonist of architecture and uses the concept of "time-space" to observe the history of all architecture. In the traditional, the classical architectural form is regarded as an "ideal form", and the neglect of architecture is the fundamental purpose of creating space. Zevi said: "The problem is that the architecture is evaluated as a sculpture or painting. That is to say, it is evaluated as a style, as the surface on its appearance.

This is not only a mistake in the method of criticism but also a conceptual mistake caused by the lack of philosophical insight. Although architecture and painting and sculpture are intertwined in many aspects, painting is a virtual space, sculpture is the creation of external space, and architecture is the creation of internal space. Only this interior space, the space surrounding and containing us is the basis for evaluating architecture, which determines the aesthetic value of the building. As Bruno Zevi said: 'Besides only the long and wide spatial form – that is, the face for us to watch – the building gives us three dimensions, which is the space in which we stand. It is the true core of architectural art. The functions of various arts are intertwined at many points; architecture has many things in common with sculpture, and there are many places in common with music. But it also has its own special field and its own unique taste. Space is what it is monopolized. In all kinds of art, only architecture can give space full value. The building can surround the audience with a hollow part of three-dimensional space, no matter how beautiful people can get from it, and it can only be provided by architecture. Painting can describe space and evoke people's impression of space. Music

can stimulate people to feel the similar image of space, while architecture deals directly with space. It uses space as a medium and puts us in it.'[11]

For a while, Bjarke Ingels is my idol. I had watched his projects, read his book(FIG. 3.5), and studied how he designs. At that time, Yes is More is my design Bible. I once thought that it was the best method of architectural design. He criticized utopian and boring boxes architecture. He thinks 'Historically, architecture has been dominated by two opposing extremes: an avant-garde full of crazy ideas, originating from philosophy or mysticism; and the well-organized corporate consultants that build predictable and boring boxes of high standard. Architecture seems entrenched: naively utopian or petrifyingly pragmatic. We believe there is a third way between these diametric opposites: a pragmatic utopian architecture that creates socially, economically, and environmentally perfect places as a practical objective.'[12]

From the Greek period to the present, architects are so obsessed with the form of architecture, including me. I am not saying that I don't love the shape. On the contrary, I am a faithful follower of the form, but if we only see the

FIG. 3.5 YES IS MORE
SOURCE:BIG BJARKE INGELS GROUP

style and do not see the beautiful space inside the form, this is a terrible thing. We need architects like Bruno Zevi to enrich the definition of architectural aesthetics, and need to reflect on the meaning of the form in addition to the artistic level. I have reflected on my own design method. Why have I been focusing on the form of architecture, never considering the attributes of space, fallen into the crisis of form, and can't get rid of it.

11 ZEVI, Bruno, 1974. Architecture as space : how to look at architecture. Horizon Press. ISBN 0818000252.

12 INGELS, Bjarke., BIG BJARKE INGELS GROUP. and DANSK ARKITEKTURCENTER., 2010. Yes is more : an archicomic on architectural evolution [online]. Evergreen. [Viewed 24 June 2019]. ISBN 9783836520102.

CAPTURE 4

The sequence of space

SOURCE:BY THE AUTHOR

4.1 CASE STUDY:SUZHOU MUSEUM

FIG. 4.1 SUZHOU MUSEUM,2010
SOURCE:BY THE AUTHOR

THE EXPERIENCE OF ASIAN GARDENS

Oriental private gardens value the Zen, which is different from the straightforward and grand western gardens. Asian gardens emphasized emotional expression, and the layout is non-linear, closer to nature. Beauty change as you walk, fascinating. Therefore, in the design of circulation, Oriental garden design integrates the intervention of emotion. The Suzhou Museum is a successful case of learning from traditional Chinese gardens.

Once entering the gates of the Suzhou Museum, passing through a minimalist courtyard, entering the hall, the distant fake mountain view(FIG. 4.1) came into your eyes. At this time, everyone will pick up a phone and make a shot. Further, into the exhibition hall, a waterscape wall adds a little dynamic to the meeting point, and the windows(FIG. 4.3 4.4) of the walkway are set with corresponding landscapes so that each door and window is like a picture. When you come to the maincourtyard, it is like you entered

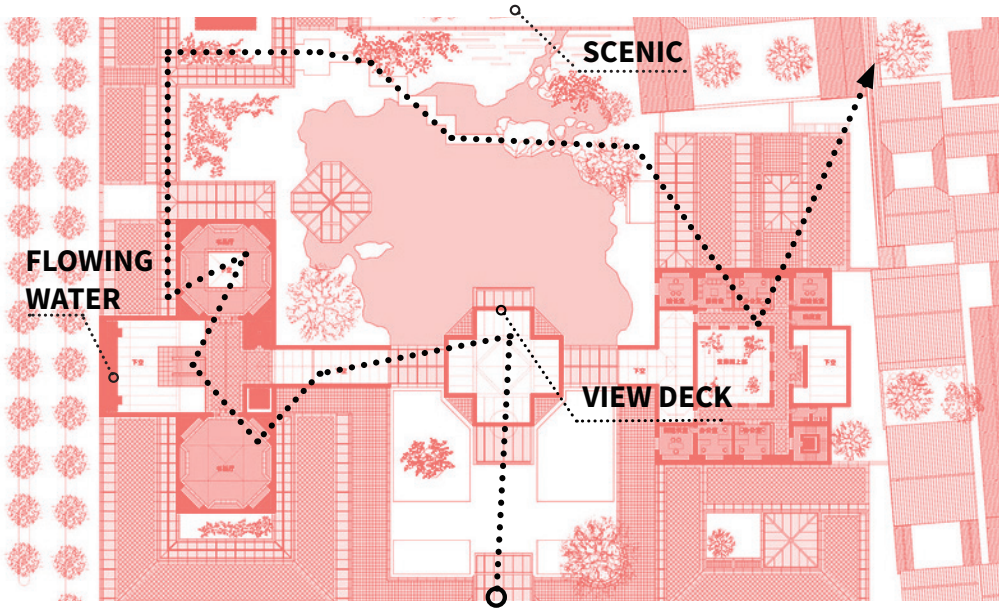


FIG. 4.2 CIRCULATION OF SUZHOU MUSEUM,2019
SOURCE:BY THE AUTHOR

the painting. Appreciation before entering, the snooping during the walk, emotions involved when you are in the garden, just like a chef to arrange dinner, first is an appetizer, then easy to digest side dishes, next follows a sumptuous main course, and finally a dessert to relish. The circulation design of the Suzhou Museum(FIG. 4.2) is like a set delicious meal, step by step. Mobilise your emotions in multiple dimensions and finally culminate in the main courtyard.

FIG. 4.3 SUZHOU MUSEUM WINDOWS
SOURCE:BY THE AUTHOR

FIG. 4.4 SUZHOU MUSEUM WINDOWS
SOURCE:BY THE AUTHOR

4.2 THE SEQUENCE

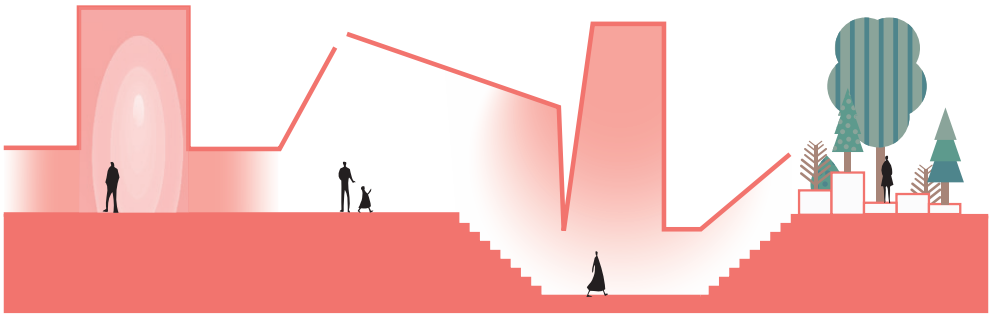


FIG. 4.5 THE SEQUENCE OF SPACE
SOURCE:BY THE AUTHOR

THE EXPERIENCE OF ASIAN GARDENS

The spatial sequence is not the same as the circulation. The circulation is usually set by human behavior, functional requirements, process flow, etc. The spatial sequence(FIG. 4.5) here is an emotional guide due to the relative change of spatial elements. It is not a necessary condition for the function of the architecture, as the emotional guidance of the architect to the visitors. In the Japanese tea court, the laying direction of the stone must be laid in one direction towards the tea room. The activities of the people in the tea court are limited. The guests need to follow the prescribed route, and some gardens also intentionally cut off roads by setting obstacles such as trees or bamboo fence walls in the middle of the road, in order to prevent visiting guests from seeing the whole scene of the tea court. Whether it is the garden gate or the middle door(中潜なかくぐり)(FIG. 4.6) or the guest door of the tea room（ 躙口にじりぐち）(FIG. 4.7) , they are endowed with profound meanings. They are the dividing line between people entering one world

FIG. 4.6 MIDEL DOOR
中潜なかくぐ
SOURCE:WWW.OMOTESENKE.JP

FIG. 4.7 GUEST DOOR OF THE TEA ROOM
躙口にじりぐち
SOURCE:AMEBLO.JP

and another. At the same time, the garden gate and the middle gate are also responsible for theisolation from the secular world in the specific form, that is, the moment the guests pass these boundaries, they are to reduce the distractions brought by the secular from the world, and wash noisy, when the soul is purified. The door is a kind of boundary. This boundary will produce a sign that enters another world from one world. Passing through this door means entering another world.

China's landscape design approach is rise after restraint, and the gardener uses the method so that the size, height, width and width of the space can be contrasted and changed. And use decoration, form and grade change, pavilion of the garden to strengthen the contrast, To make the overall garden a sharp contrast in the spatial layout. The initial part of the space makes the trees densely block the entrance, and the line of sight is relatively closed. The road is narrow and twisted, the building is dense, the courtyard is deep, and the passage is complicated, and the waters in the lake garden are vast, the pavilions are high.Use the contrast of the spatial flow direction and the contrast of the line of sight to stimulate the enthusiasm of the tour.

In the fifteenth century, the churches after the European Renaissance were magnificent, grand and towering, to create a place for more people to receive the religious doctrine and promote the communication between the people and God. The arched space adopts a skylight device. When the sun shines on the whole church(FIG. 4.8), the whole church is filled with the warmth of the sun, as if shining from the sublime heaven. The whole church gives people a feeling of lofty and open, but warm and tranquility. However, to make visitors feel like this, they usually suppress it before the towering space, which will make the relative height higher, thus affecting people's psychological emotions. Large Spaces, such as airports, have no such need.
Some spaces may be based on changes in proportion, volume, brightness,

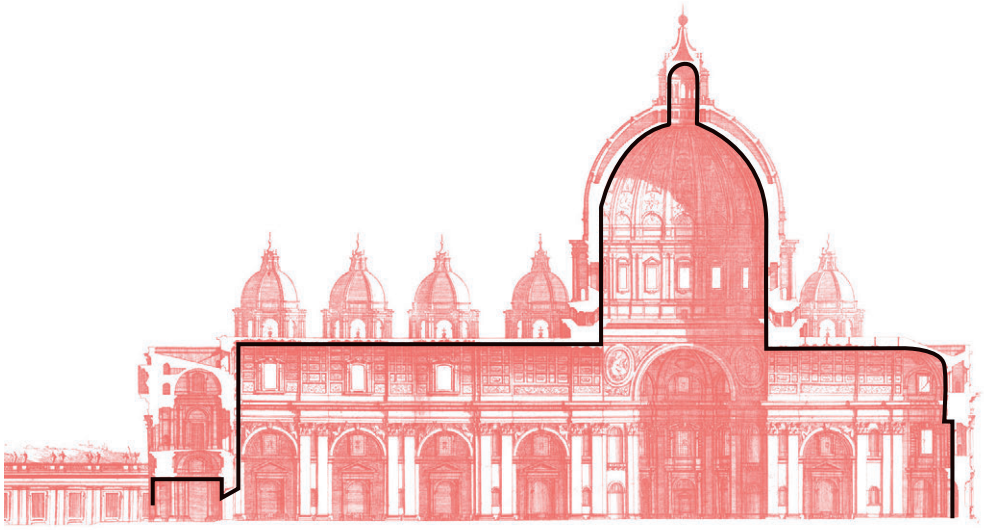


FIG. 4.8 LONGITUDINAL SECTION OF ST PETER'S BASILICA AND SQUARE
FROM CARLO FONTANA, IL TEMPIO VATICANO 1694, ROME
SOURCE:STPETERSBASILICA.INFO

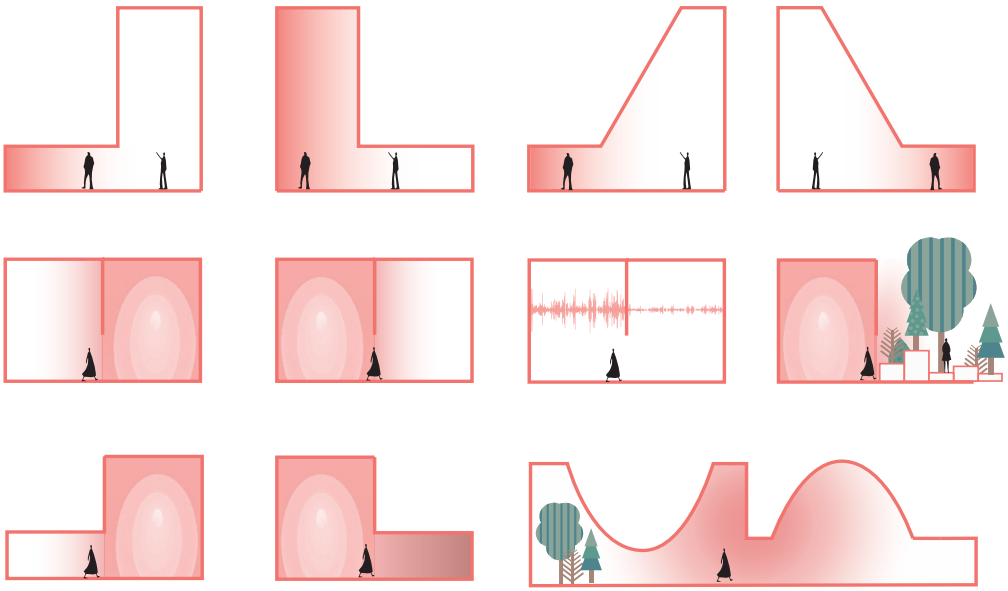


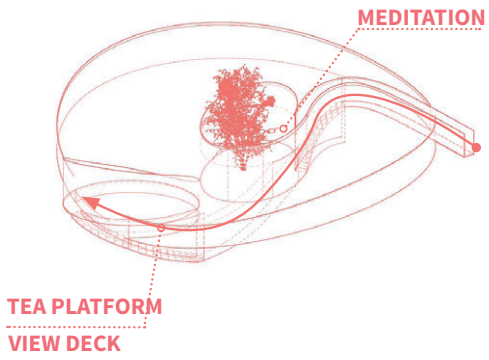
FIG. 4.9 SOME EXAMPLES OF SPATIAL SEQUENCES
SOURCE:BY THE AUTHOR

texture, color, etc. to adjust the mood of visitors. The psychological response of different spatial sequences(FIG. 4.9) is different. From a towering space into a low space, and from a low, narrow, dark and humid space into bright, dry space is another feeling. Use a sequence of spaces to create a psychological gap in space, giving visitors a better experience. So how to arrange the order of the space, the organization of the streamline is not only a functional requirement, but the psychological needs can also be used as a coaching strategy.

4.3 DESIGN 4,5,6

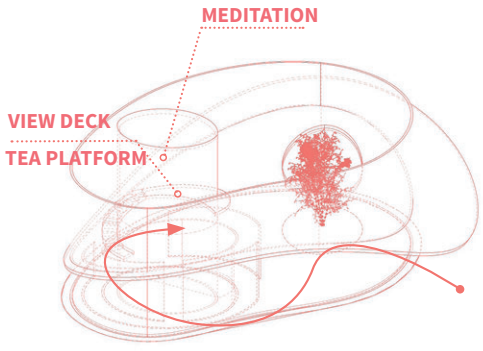
EXPLORE CIRCULATION

Design 4 (FIG. 4.10)and Design 5(FIG. 4.11), including some other sketches that I have drawn, are all exploring a question of how this spatial sequence should be arranged. The circulation of Design 4 starts through a semi-open road, and then downstairs to a sinking meditation space with a tree, where you can stay meditation and continue to move forward. Go forward into a narrow passage without light, at the end of the curved passage there is an upward exit, and the exit has a light guide to the landscape platform. On the landscape platform, you can see the scenery of the whole landscape including the tree. At the same time, the landscape platform is separated from the outside by a wall, but you can see it from outside. If you want to enter it, you must walk through three spaces. The scenery seen outside is different from the inside. The result of this sequence emphasizes the balance of the space, which is not completely separated from the outside world.



Design 4

FIG. 4.10 DESIGN 4 DRAWING
SOURCE:BY THE AUTHOR



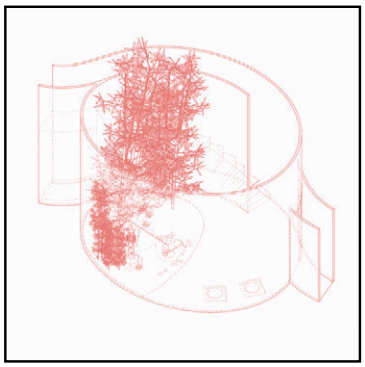
Design 5

FIG. 4.11 DESIGN 5 DRAWING
SOURCE:BY THE AUTHOR

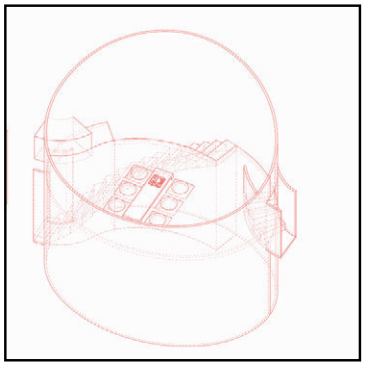
Design 5 has a different idea. Design 5 is a two-layer design. The flow line onthe first floor is transparent and free. However, to enter the landscape platform, it is necessary to enter a lightless meditation space. After the meditation space, the second floor is completely closed Inner courtyard. The space of design 5 is completely separate from the outside world.

EXTRACT ELEMENTS & ASSUMED EMOTIONAL VALUE

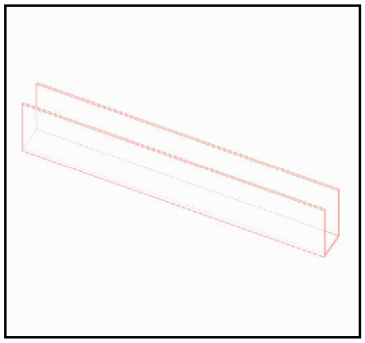
Which sequence is better? Or Can I give each space a hypothetical emotional value, after I arrange all their possibilities, Then look for the answer I want from the numerical difference value?So,In Design 4&5 four components can be extracted.1\Uncover path 2\Closed tunnel 3\Meditation space 4\Tea platform(FIG. 4.12) .Then I will give an emotional value P to different elements, such as Uncover path's emotional hypothesis PA=0.58, Closed tunnel PB=0.18, Meditation space PC=0.36, Tea platform PD=0.82, if we connect PA to PB, they have an emotional hypothesis difference between them HAB=PA-PB=0.4. So there are 24 combinations. Using the difference in emotion between components we can plot a chart of combination. This is like the cuisines service order, starting with appetisers, followed by fish, main course, salad, cheese, dessert. But if you want to highlight a new food that you design, you may adjust the order between them. So, in the same space, if the order of the arrangements is different, the difference in emotion will be not the same. A towering church atrium usually has a low foyer outside it. So according to my hypothetical value, I made 24 combinations.



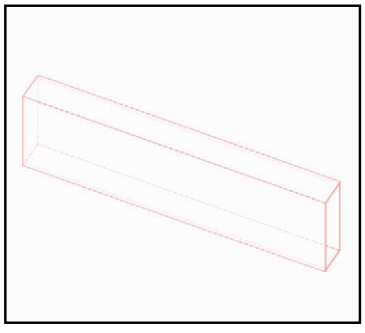
MEDITATION SPACE



TEA PLATFORM



UNCOVER PATH



CLOSED TUNNEL

FIG. 4.12 FOUR ELEMENTS
SOURCE:BY THE AUTHOR

SPACE COMBINATION STRATEGY

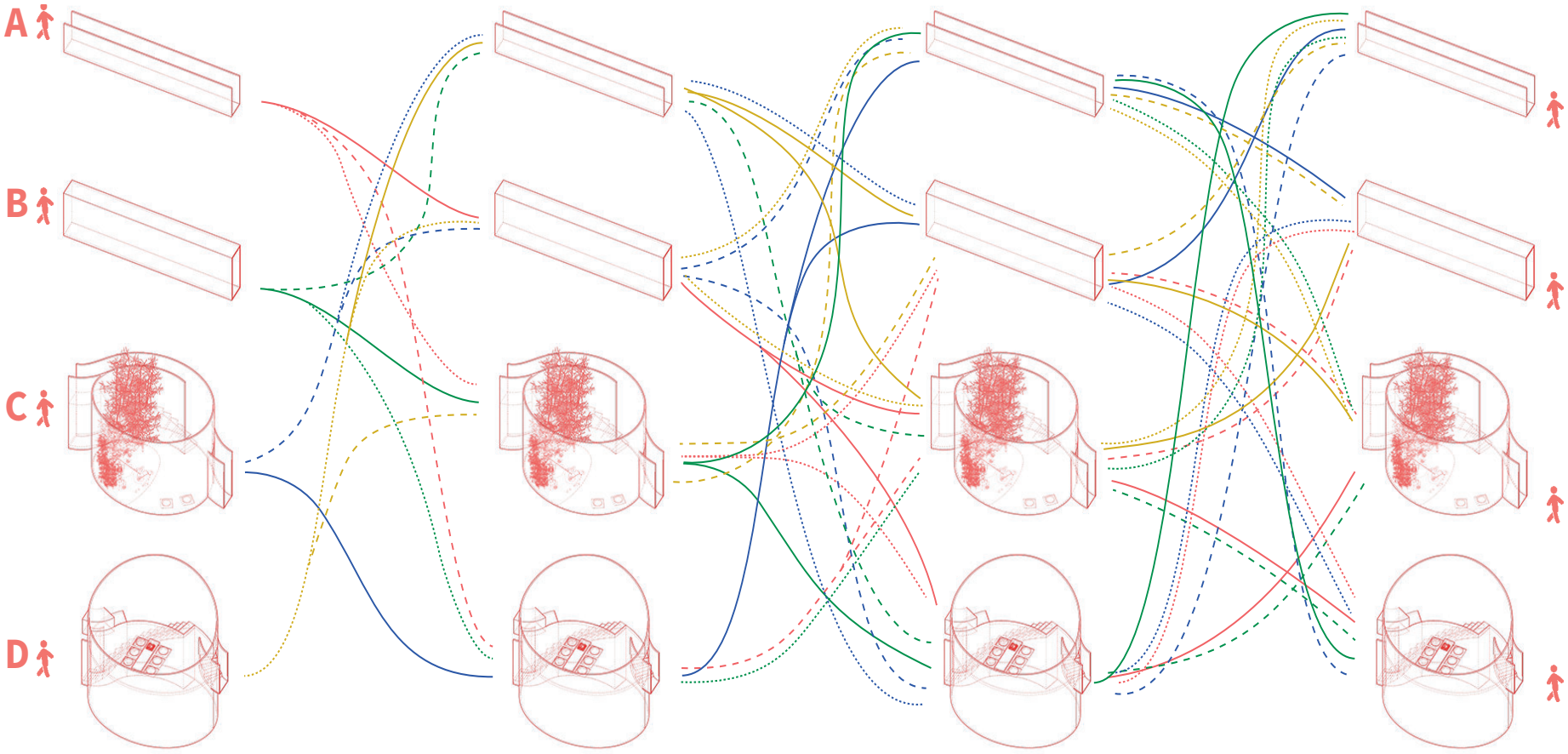
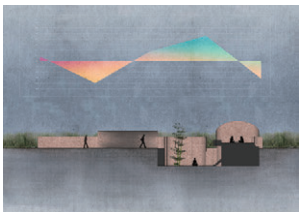


FIG. 4.13 SPACE COMBINATION POSSIBILITY
SOURCE:BY THE AUTHOR

COMBINATIONS RESULT WITH EMOTIONAL VALUE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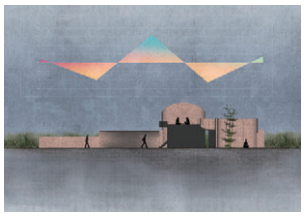
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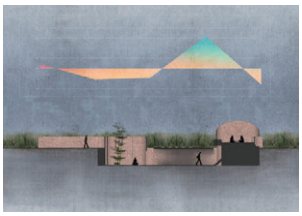
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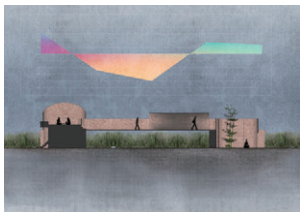
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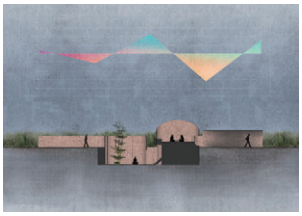
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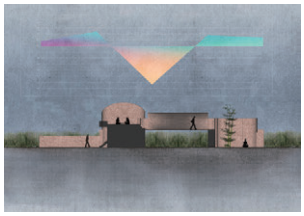
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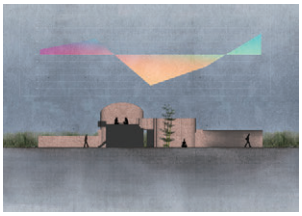
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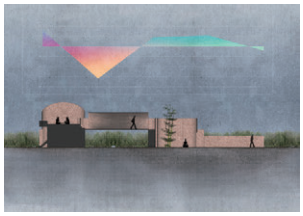
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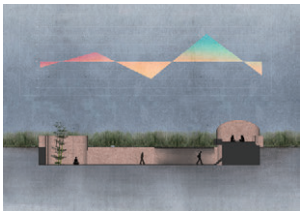
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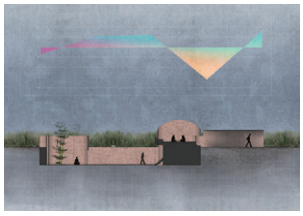
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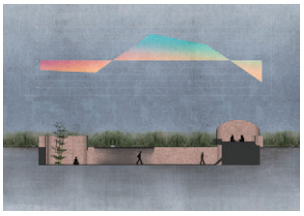
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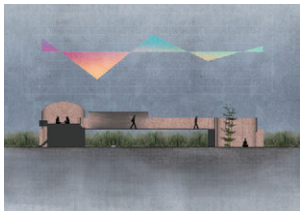
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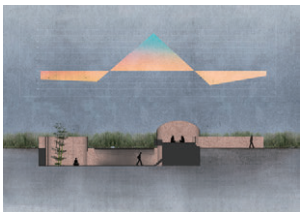
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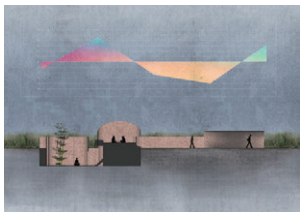
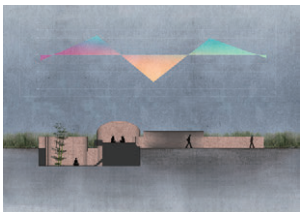
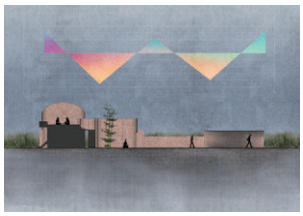
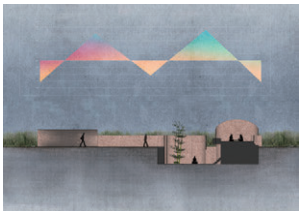
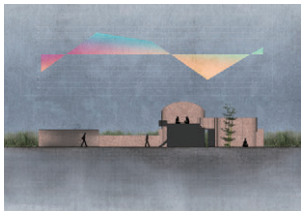

C-D-A-B


C-D-B-A


A-D-B-C


B-A-C-D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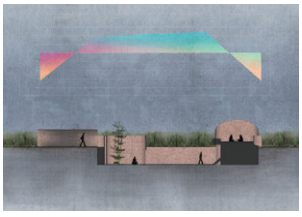
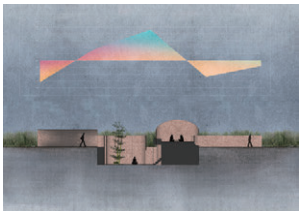
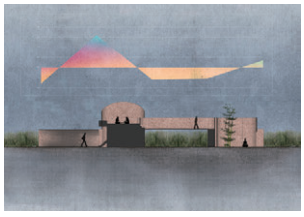
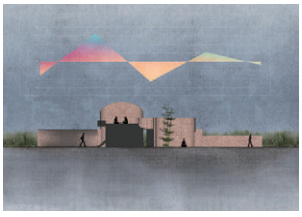

B-C-A-D


A-C-B-D


B-C-D-A


B-D-A-C


B-D-C-A


A-D-C-B

FIG. 4.14 TWENTY-FOUR COMBINATIONS RESULT WITH EMOTION VALUE
SOURCE:BY THE AUTHOR

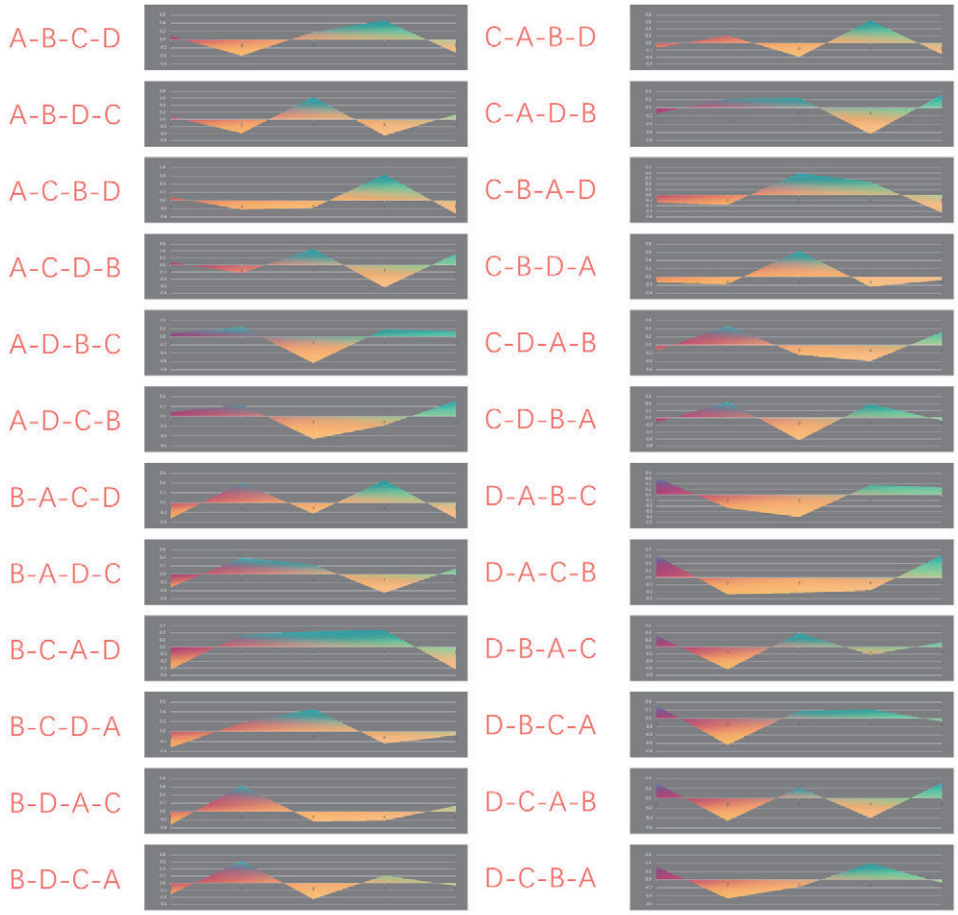


FIG. 4.15 TWENTY-FOUR COMBINATIONS EMOTION VALUE
SOURCE:BY THE AUTHOR

DESIGN BY EMOTIONAL GUIDANCE

After comparing 24 charts(FIG. 4.15), I will choose the arrangement of CABD as my design order. I hope that when I enter the pavilion, there is a small climax. When I go deeper, my emotions will slow down. Until reaching the tea platform, it reaches its peak. And this arrangement is what I want to create mood swings. The next step is to strengthen the space or details. Maybe if you're going to design a paler emotional route, you will choose BCAD or DACB. This is the design logic of emotional guidance.Design 6(FIG. 4.16) is design by the order of BCAD. So the sequence of design 6 is that from the beginning into a meditation

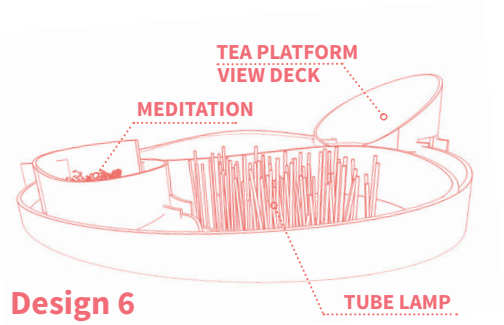


FIG. 4.16 DESIGN 6 DRAWING
SOURCE:BY THE AUTHOR

space with plants. The space through meditation is a semi-open path around the tube lamp and then enters a tunnel without light. At the end of the tunnel is an up staircase, above the stairs. It is a landscape platform. The landscape platform where you can see the entire view with a one-way exit.

DESIGN 6 DRAWING

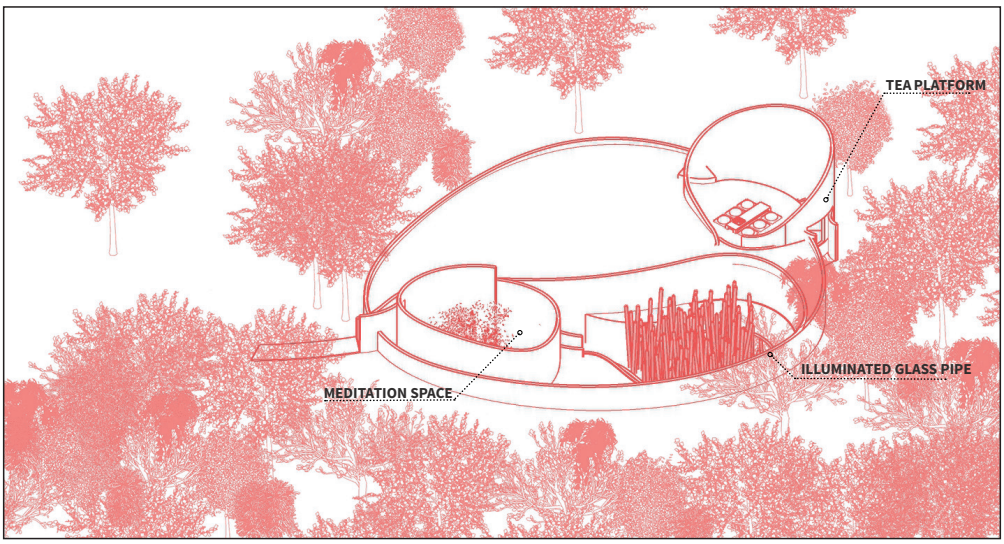


FIG. 4.17 DESIGN 6 DRAWING
SOURCE:BY THE AUTHOR

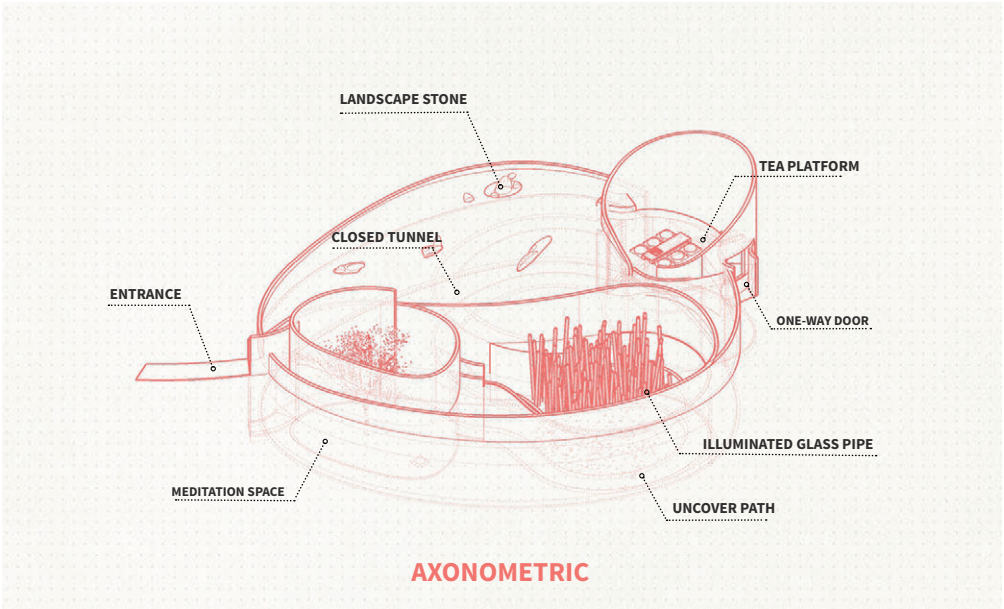


FIG. 4.18 DESIGN 6 AXONOMETRIC
SOURCE:BY THE AUTHOR

DESIGN 6 DRAWING

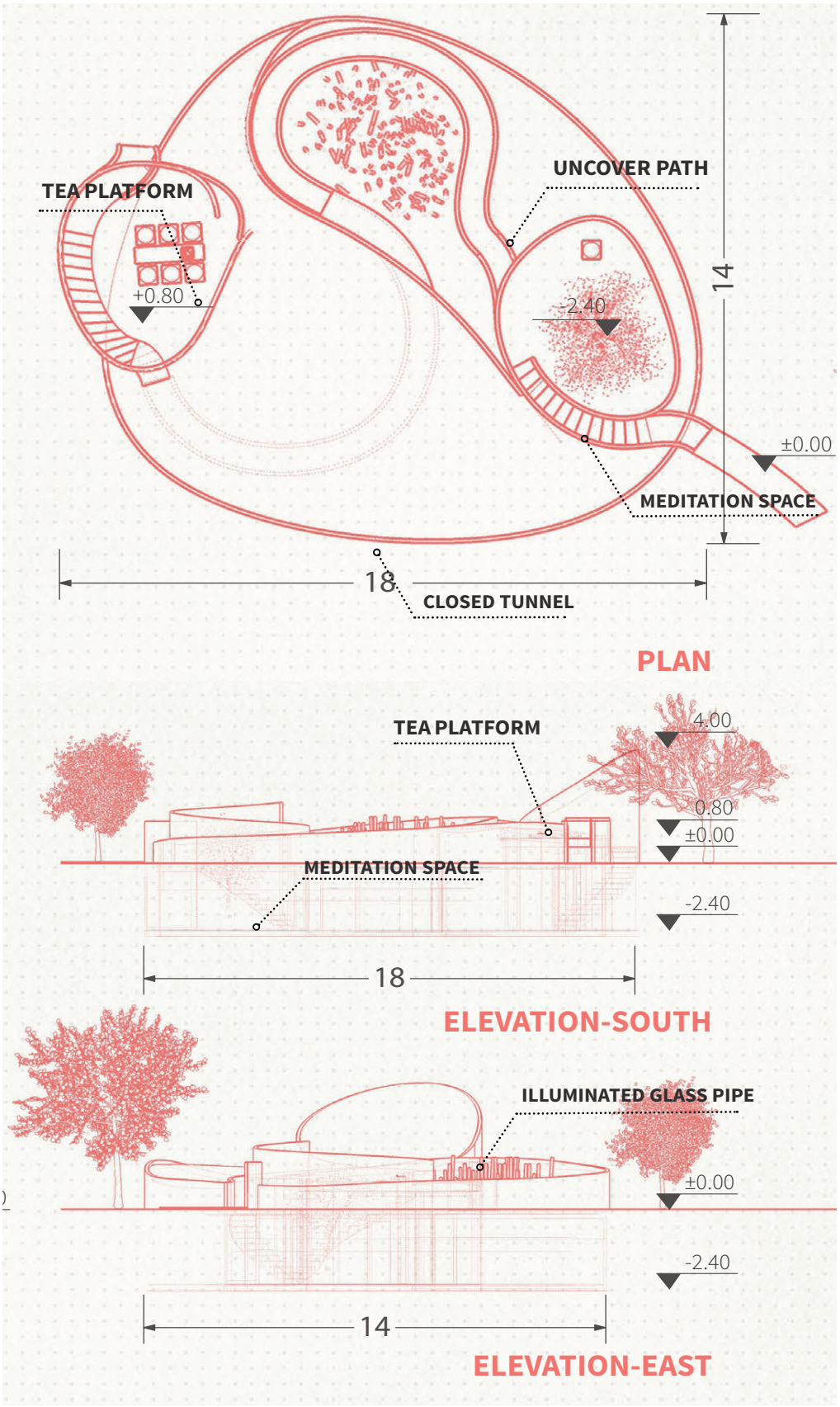


FIG. 4.19 DESIGN 6 DRAWING
SOURCE:BY THE AUTHOR

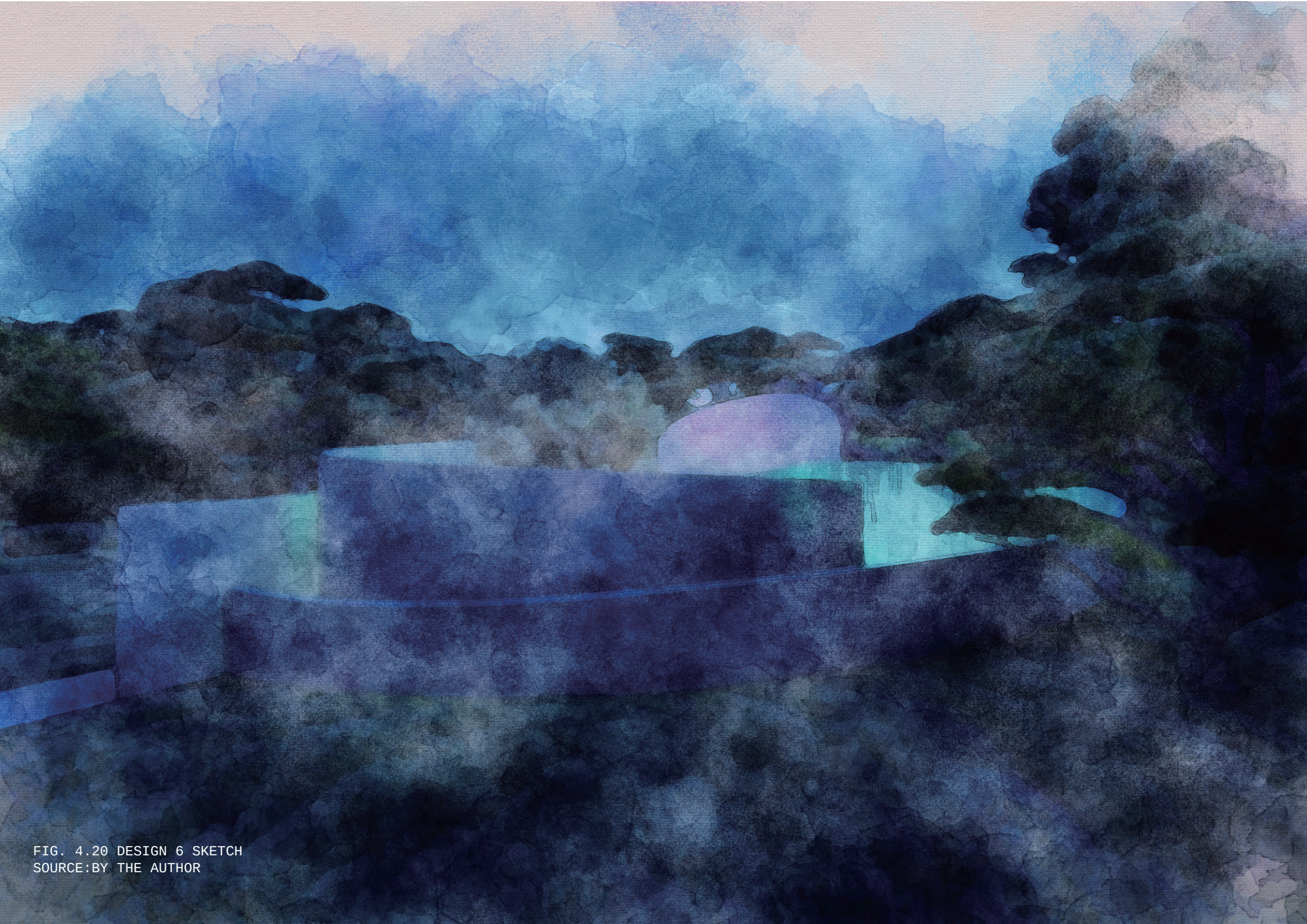


FIG. 4.20 DESIGN 6 SKETCH
SOURCE:BY THE AUTHOR

DESIGN 6 RENDERING

FIG. 4.21 AERIAL VIEW(NIGHT)
SOURCE:BY THE AUTHOR

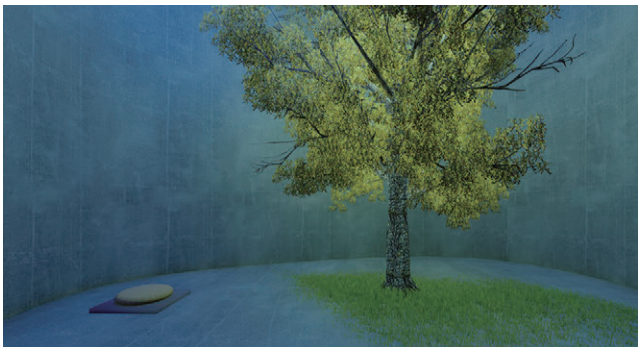


FIG. 4.22 MEDITATION SPACE(NIGHT)
SOURCE:BY THE AUTHOR

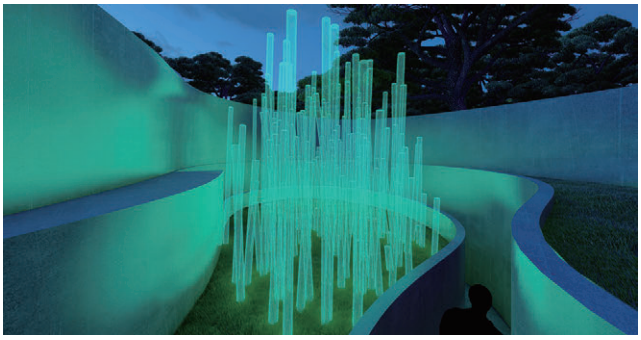


FIG. 4.23 GLASSES TUBE-LIGHT(NIGHT)
SOURCE:BY THE AUTHOR

FIG. 4.24 TEA PLATFORM(NIGHT)
SOURCE:BY THE AUTHOR

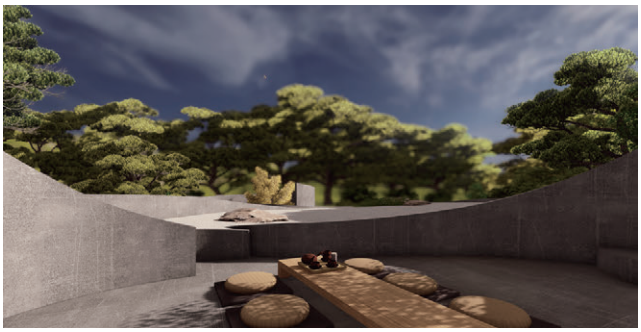


FIG. 4.25 TEA PLATFORM
SOURCE:BY THE AUTHOR

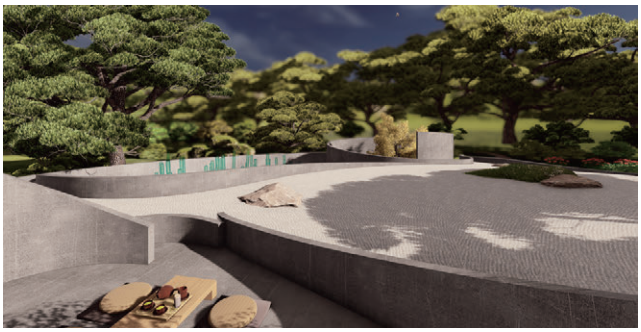


FIG. 4.26 TEA PLATFORM VIEW
SOURCE:BY THE AUTHOR

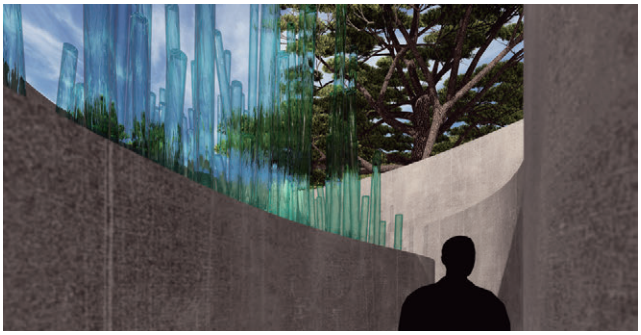
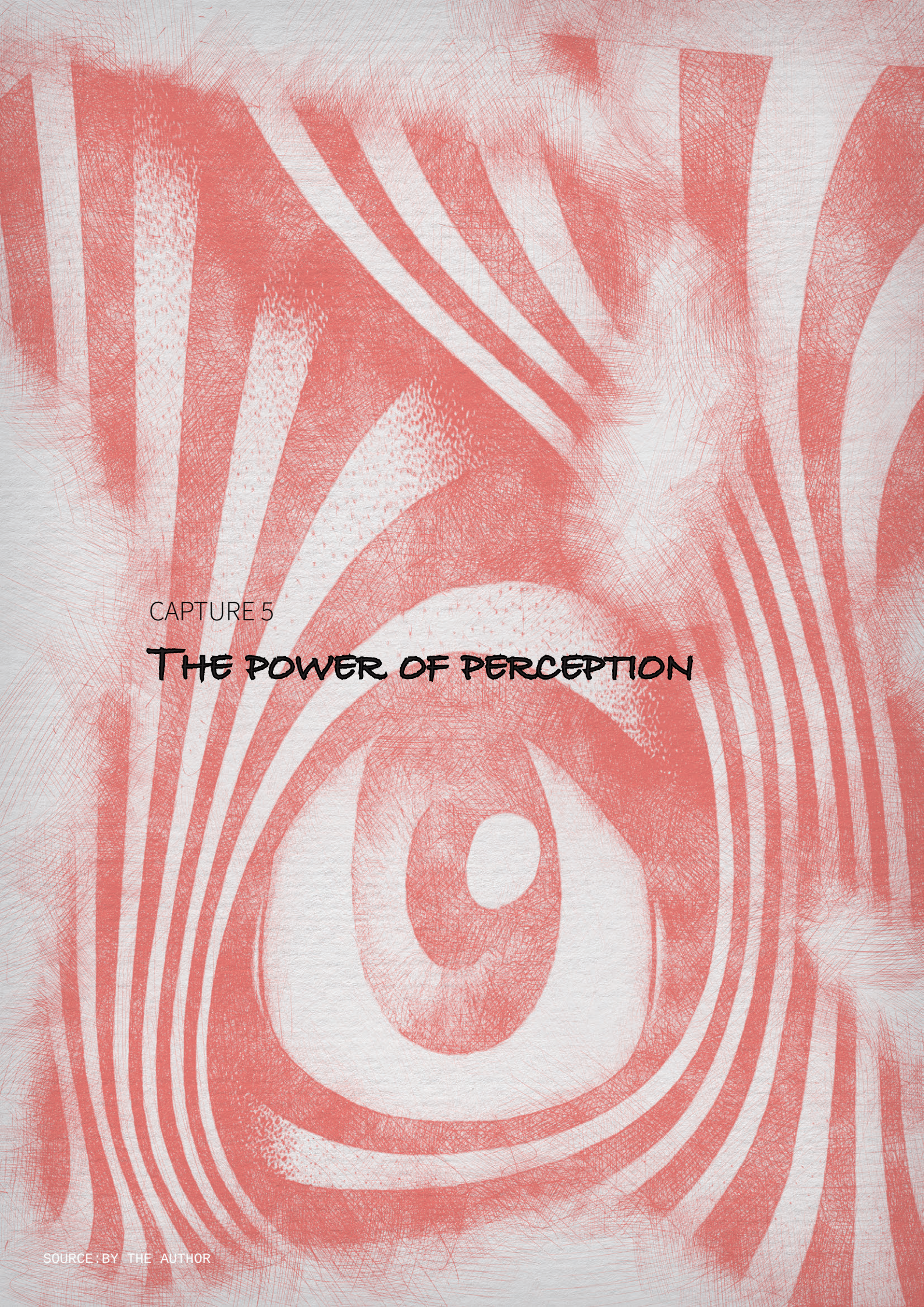


FIG. 4.27 UNCOVER PATH
SOURCE:BY THE AUTHOR

FIG. 4.28 MEDITATION SPACE
SOURCE:BY THE AUTHOR



CAPTURE 5

The power of perception

SOURCE: BY THE AUTHOR

5.1 STUDY CASE-JEWISH MUSEUM BERLIN

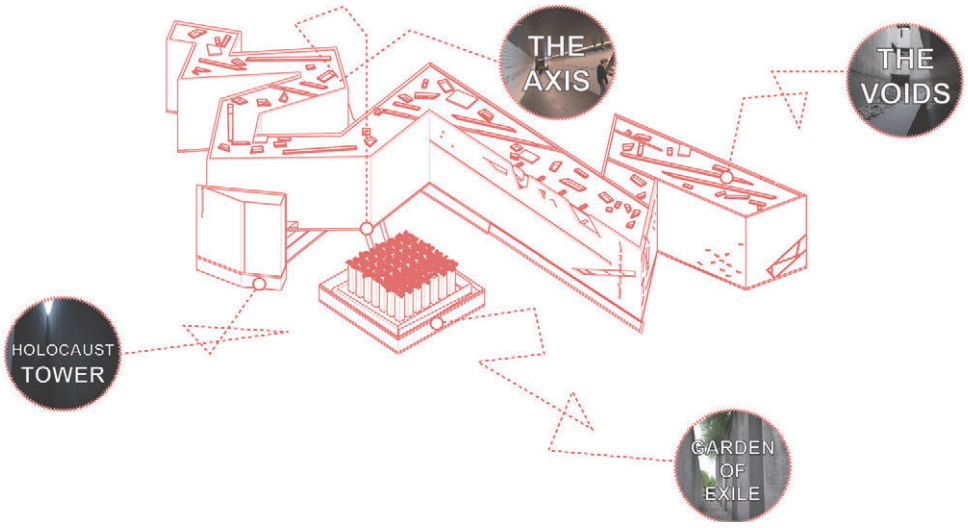


FIG. 5.1 FOUR SPACE OF JEWISH MUSEUM BERLIN
SOURCE:BY THE AUTHOR

TO MEASURE PERCEPTIONS

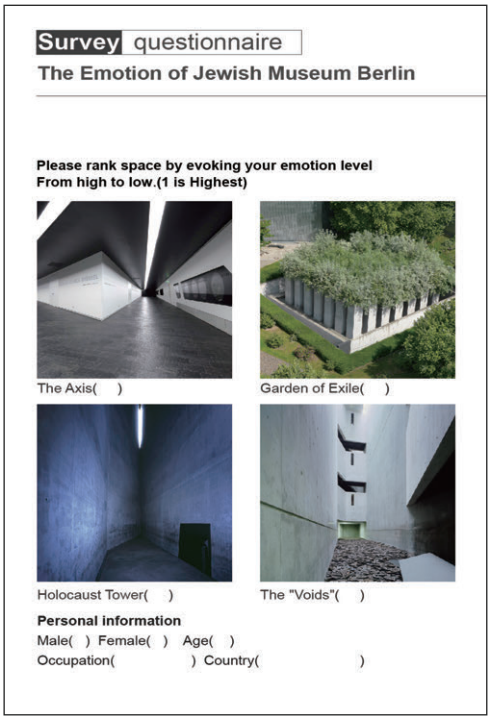
I used my own assumed emotional value when designing 6. Professor Josep Maria said that I couldn't assume an emotional value, because emotions are vary among individuals. He advised me to try to measure some specific perceptions, such as temperature, decibel, Brightness, etc. because these data are more objective. The emotions that each person receives from these elements are very subjective. Sitting in a classroom at 28.0 °C , students from the North may feel very hot, but those from the South may feel very cold.

The idea at the beginning was to find a space in Barcelona to do my research case, but with the teacher's recommendation, I chose the Berlin Jewish Museum(FIG. 5.1). I have visited the Jewish Museum twice before, and

FIG. 5.2 QUESTIONNAIRE DATA-THE RANKING OF SPACE BY EVOKES EMOTIONS
SOURCE:BY THE AUTHOR

this time I have to do measurements. In addition to measuring data, I also did a questionnaire with only one question(FIG. 5.3).. I want to know how the visitor judged the space I will measure, so after I have these measurements, I will put those data link to the results of the questionnaire

The results of the survey(FIG. 5.2). showed that the space that had the greatest impact on their emotion was the Holocaust tower, followed by "The Voids", the third was Garden of Exile, and the fourth was The Axis. This result was similar to my feelings. The Holocaust tower have large proportion, the lightless, and echo design; everyone is very suppressing in there. And "The Voids" get its name from the touching sound effect of the art installation. The garden is more relaxing than the others, while The Axis uses a sloping ground,


Survey questionnaire

The Emotion of Jewish Museum Berlin

Please rank space by evoking your emotion level
From high to low.(1 is Highest)

The Axis( )

Garden of Exile( )

Holocaust Tower( )

The "Voids"( )

Personal information

Male( ) Female( ) Age( )

Occupation( ) Country( )

FIG. 5.3 SURVEY FORM
SOURCE: BY THE AUTHOR,

SOUND LEVEL METER

LIGHT METER

TEMPERATURE & HUMIDITY METER

AUDIO RECORDER

SPECTROMETER

FIG. 5.4 MEASURING INSTRUMENT
SOURCE: BY THE AUTHOR

but the inclination is not strong enough, the exhibits are not stimulating. So this result matched what I had expected.

I took the sound level meter, the light meter, the temperature & humidity meter, the audio recording, and the spectrometer to measure the data(FIG. 5.4).. I mentioned the four spaces I measured were 1); Holocaust Tower; 2) Garden of Exile; 3) The "Voids"; 4) The Axis.

At Holocaust Tower(FIG. 5.5). the illumination was just 2.7-5.7Lx. The spectrum was all-natural spectrum with color temperature 4918K; the temperature is 16.3 ºC, humidity 46.3%, minimum decibel 39, and maximum decibel 84. From the audio recording analysis, the lowest decibel comes from the noise of the environment. The high frequency of the sound is the sound of closing the door. Because the height of the space is 21 meters(more than 17 meters), it will produce an echo effect, which will help to control the static feeling.

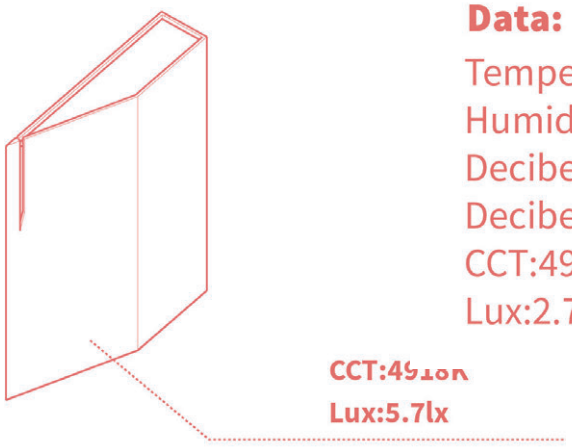
The illumination of the Garden of Exile(FIG. 5.6). is from 2940- 18400Lx, the spectrum is all natural spectrum,

the color temperature is 5986-6234K, the temperature is 16.6 ºC, the humidity is 37.4%, the lowest decibel is 43.7, the highest decibel is 71.5. Three of the four spaces are used natural light, but only this is outdoor space, the color temperature and illumination have reached the highest value, and the ratio of the end to the entrance illumination is six times. Although it is outdoors, the decibel value is not very high, the high-frequency sound comes from the bird, and the whole environment is more natural. Because it is outdoors, it can be imagined that its parameters will be affected by the weather.

The "Voids"(FIG. 5.7). illuminance is from 279- 429Lx, the spectrum is all natural spectrum, the color temperature is 5716-5914K, the temperature is 19.7 ºC, the humidity is 58.7%, the lowest decibel is 40.6, the highest decibel is 98.2, The humidity and decibel in this space are the highest, and the perception of humidity and temperature throughout the visit is not very strong. Due to the art installation, it can be seen in the sound spectrum that the sound of this space is more frequently than other three spaces, and there are also have some empty overtones since the height of the space is 21 meters. The illuminance is normal indoor natural light.

The Axis(FIG. 5.8).'s illumination is from 67.5-115Lx, the spectrum is an all-natural spectrum, the color temperature is 3056- 3081K, the temperature is 22 degrees Celsius, the humidity is 36.7%, the lowest decibel is 50.2, and the highest decibel is 77.8. The Axis is the weakest sense of presence in the four spaces. It may be related to his functionality, more defined as a path, the light is using LED light, and the yellow and blue light were more prominent. There are 115Lx under the light and 67.5Lx near the wall. The lowest decibel is the highest of the four spaces. This should be because the visitors are free to speak, and the sound spectrum does not show regular sound. The sound and light of this space have the least effect. Although the ground is inclined, because the scale is not in huge changes, the intensity is insufficient, and the perception is not deep.

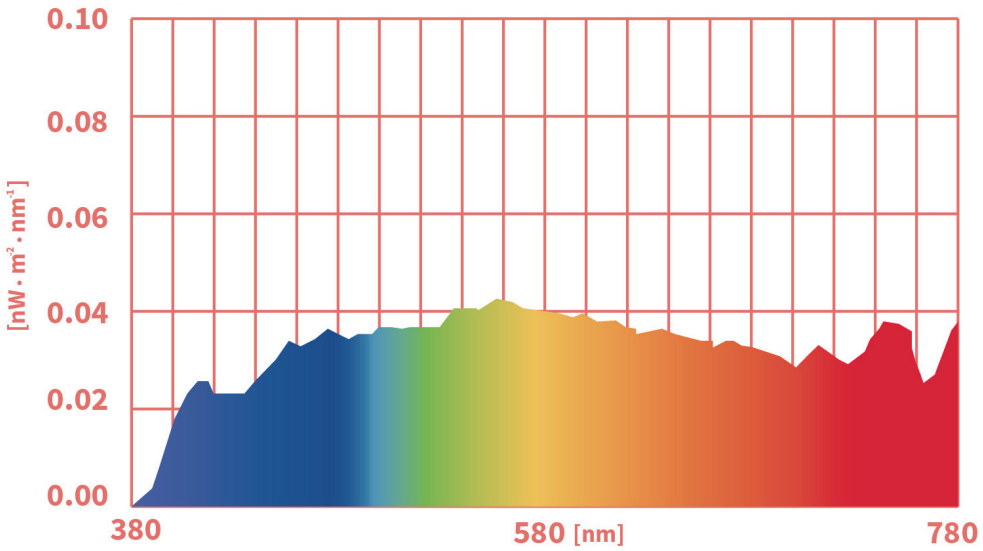
HOLOCAUST TOWER MEASUREMENT DATA



Data:

Temperature:16.3℃
Humidity:46.3%
Decibel MIN:39
Decibel MAX:84
CCT:4918K
Lux:2.7-5.7lx

LIGHT SPECTRUM



SOUND SPECTRUM

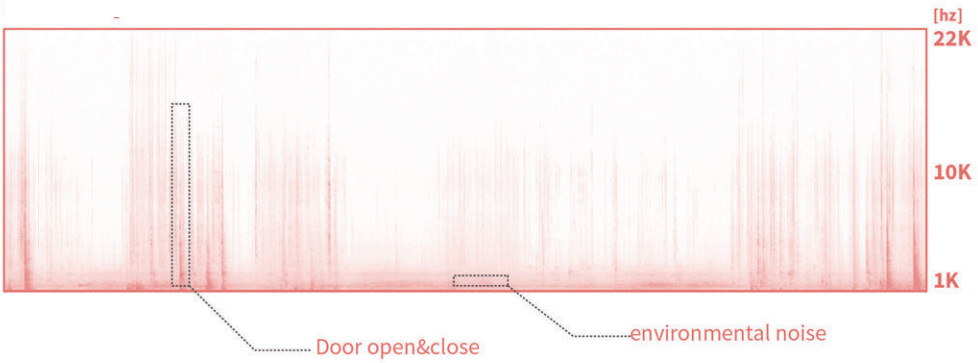
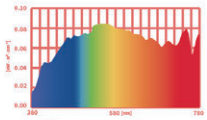


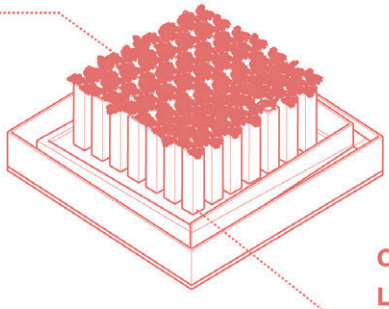
FIG. 5.5 HOLOCAUST TOWER MEASUREMENT DATA
SOURCE: BY THE AUTHOR

GARDEN OF EXILE MEASUREMENT DATA



CCT:5986K

Lux:2940lx



CCT:6234K

Lux:18400lx

Data:

Temperature:16.6℃

Humidity:37.4%

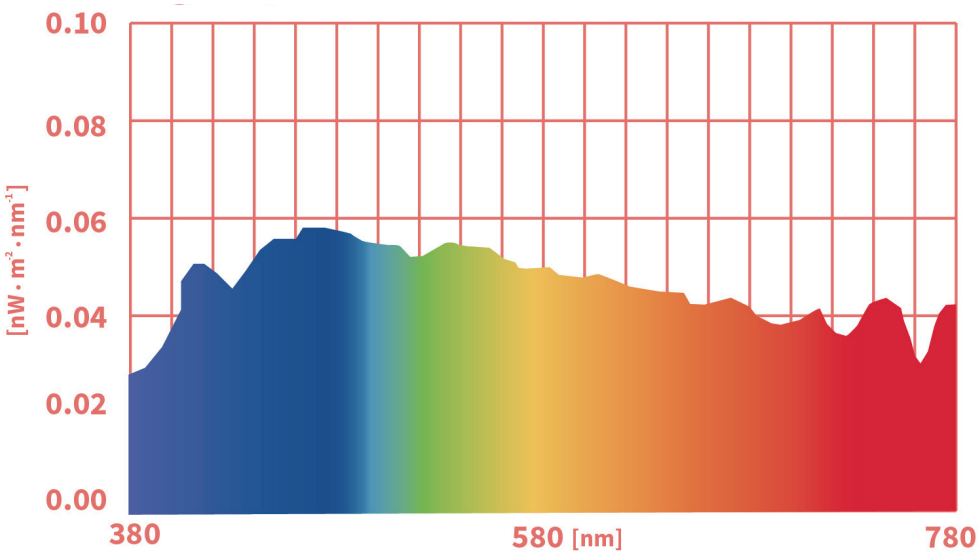
Decibel MIN:43.7

Decibel MAX:71.5

CCT:5986-6234K

Lux:2940-18400lx

LIGHT SPECTRUM



SOUND SPECTRUM

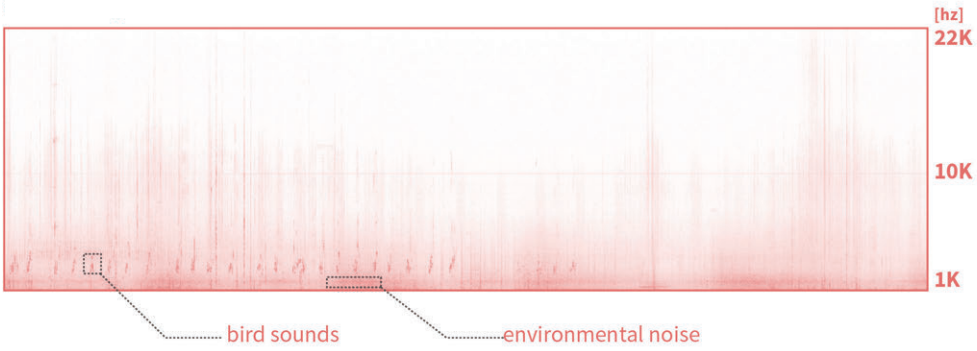
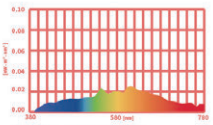


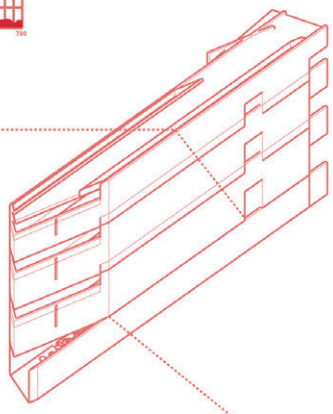
FIG. 5.6 GARDEN FO EXILE MEASUREMENT DATA
SOURCE: BY THE AUTHOR

THE "VOILDS" MEASUREMENT DATA



CCT:5716K

Lux:279lx



Data:

Temperature:19.7

Humidity:58.7%

Decibel MIN:40.6

Decibel MAX:98.2

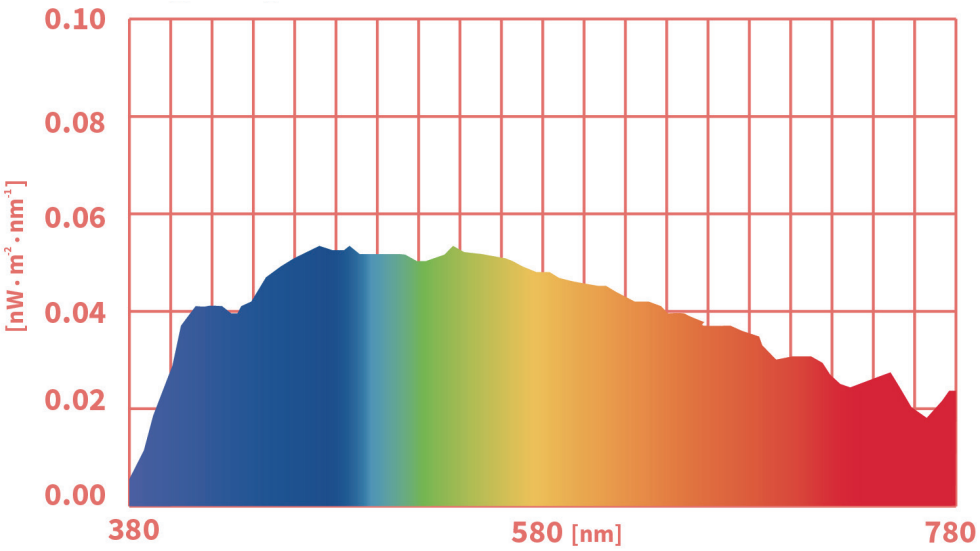
CCT:5716-5914K

Lux:279-429lx

CCT:5914K

Lux:429lx

LIGHT SPECTRUM



SOUND SPECTRUM

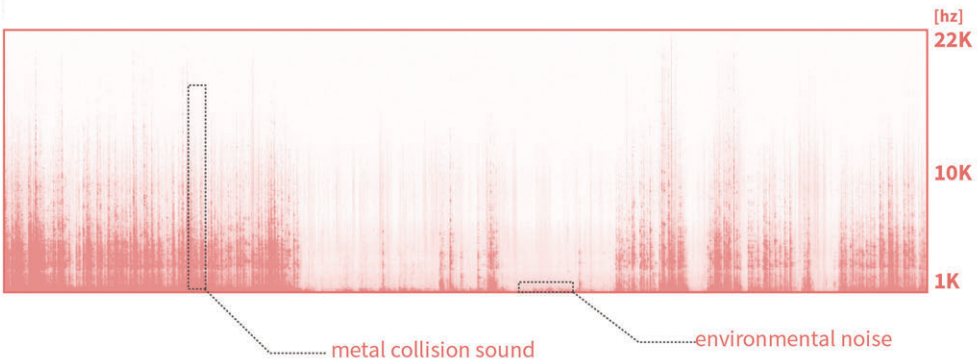
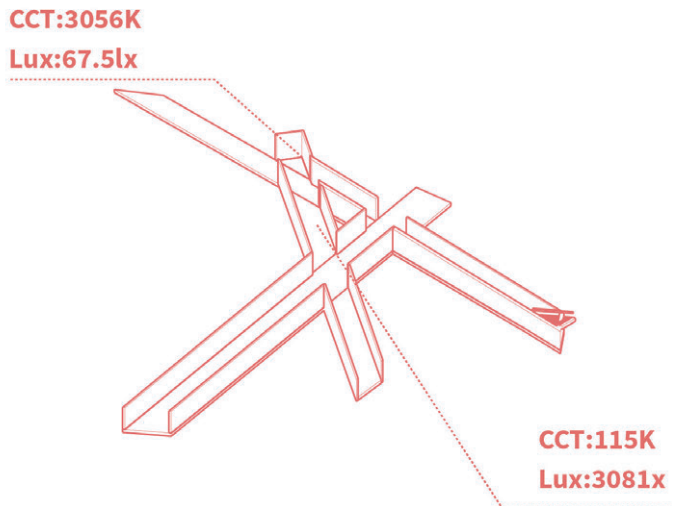


FIG. 5.7 THE "VOILDS" MEASUREMENT DATA
SOURCE: BY THE AUTHOR

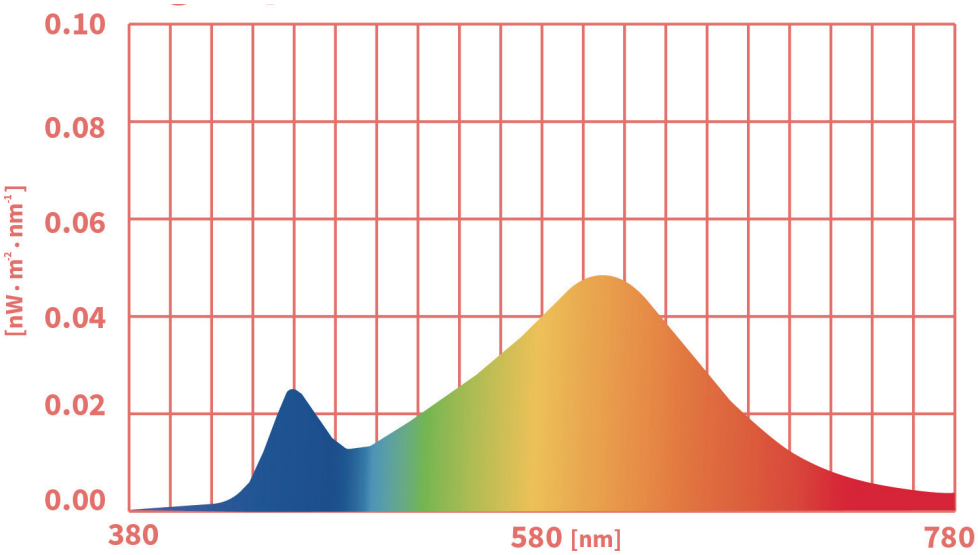
THE AXIS MEASUREMENT DATA



Data:

Temperature:22
Humidity:36.7%
Decibel MIN:50.2
Decibel MAX:77.8
CCT:3056-3081K
Lux:67.5-115lx

LIGHT SPECTRUM



SOUND SPECTRUM

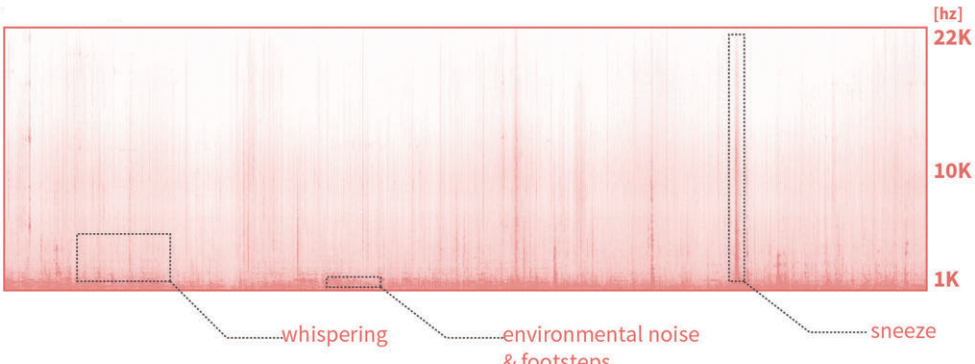


FIG. 5.8 THE AXIS MEASUREMENT DATA
SOURCE: BY THE AUTHOR

5.2 DESIGN 7: DESIGN AN EXPERIENCE

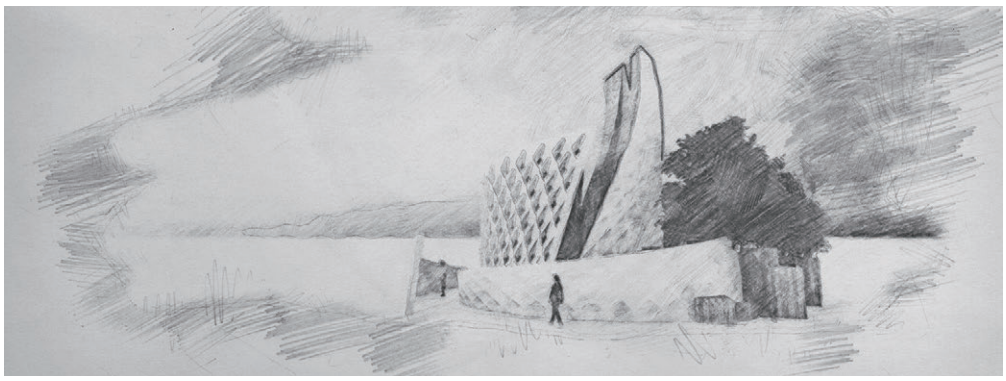


FIG. 5.9 DESIGN 7 SKETCH
SOURCE: BY THE AUTHOR

ROOMS WITH PERCEPTIONS

From the data and questionnaires of the Jewish Museum, I found that each of these spaces has its specific properties. I extracted four characteristics(FIG. 5.10), 1)proportion; 2)Audio; 3) natural;4) light. These four features can be used as a design element to evoke the emotions of visitors. I try to integrate these four elements into my design of the pavilion.I want to design a four-part circular pavilion(FIG. 5.9 5.11 5.12), each space has its own theme, and there are entrance and exit between all of them. This way the circulation of visitors is designed to

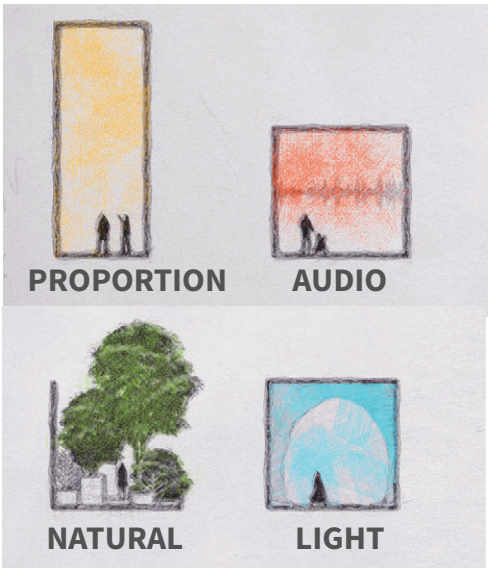


FIG. 5.10 FOUR CHARACTERISTICS
SOURCE: BY THE AUTHOR

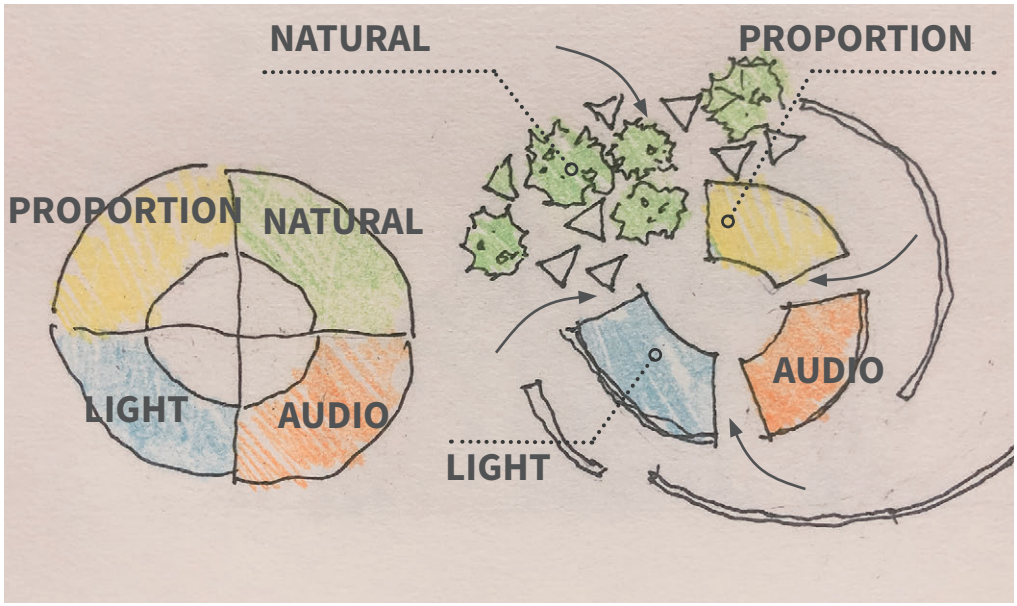


FIG. 5.11 DESIGN CONCEPT SKETCH
SOURCE: BY THE AUTHOR

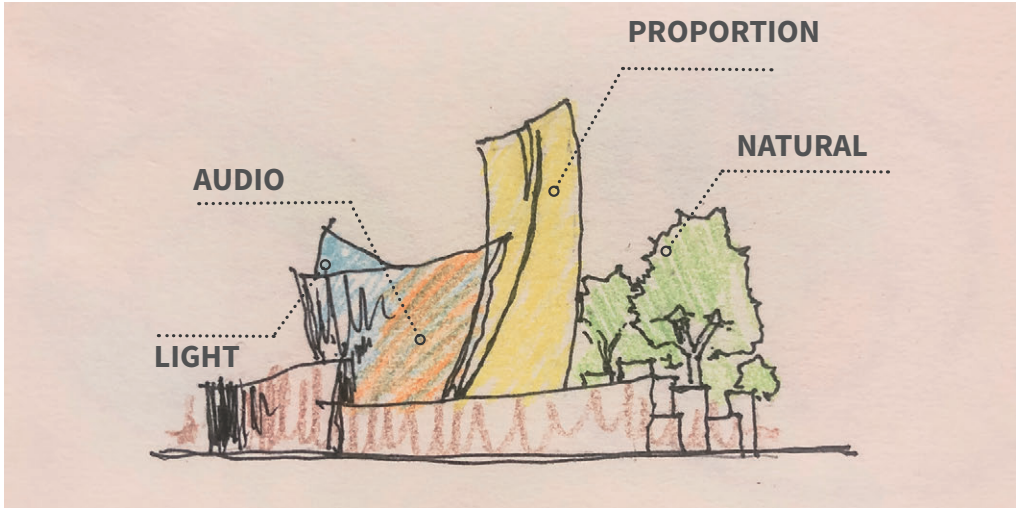


FIG. 5.12 DESIGN CONCEPT SKETCH
SOURCE: BY THE AUTHOR

be free, and they can be influenced by different movements.

FIG. 5.13 DESIGN 7 RENDERING
SOURCE:BY THE AUTHOR

DESIGN 7 RENDERING

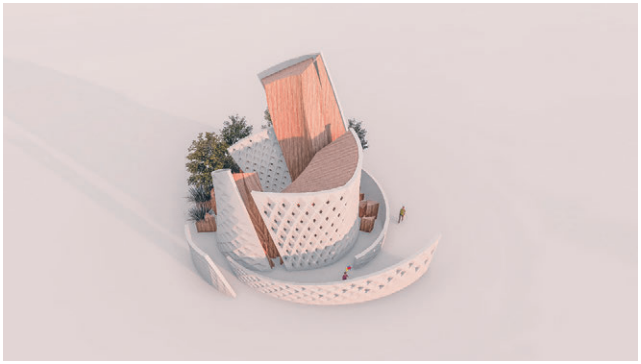


FIG. 5.14 AERIAL VIEW
SOURCE:BY THE AUTHOR

FIG. 5.15 PERSPECTIVE VIEW
SOURCE:BY THE AUTHOR

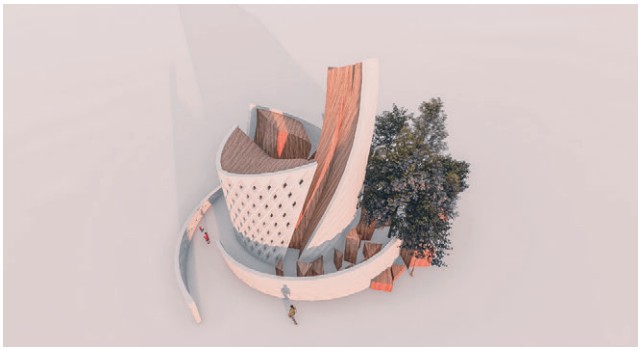


FIG. 5.16 AERIAL VIEW
SOURCE:BY THE AUTHOR

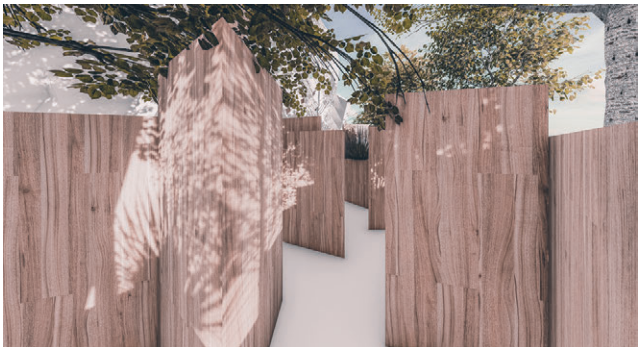


FIG. 5.17 NATURAL SPACE
SOURCE:BY THE AUTHOR

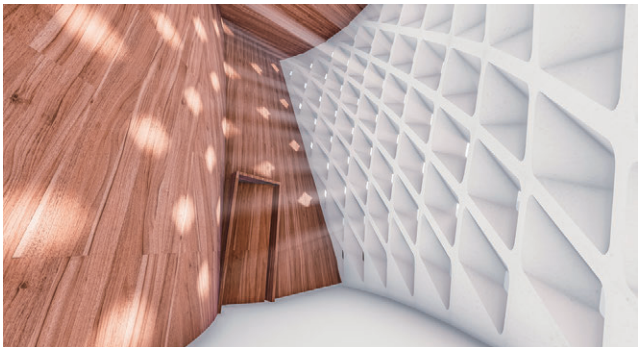


FIG. 5.18 INSIDE ROOM VIEW
SOURCE:BY THE AUTHOR

FIG. 5.19 AERIAL VIEW
SOURCE:BY THE AUTHOR

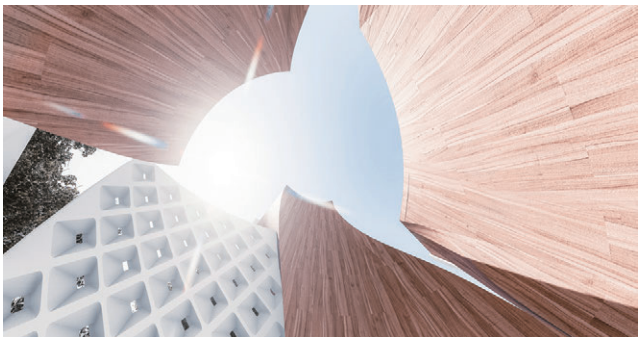


FIG. 5.20 COURTYARD VIEW
SOURCE:BY THE AUTHOR

FIG. 5.21 NATURAL SPACE
SOURCE:BY THE AUTHOR

5.3 WAYS TO EVOKE EMOTIONS

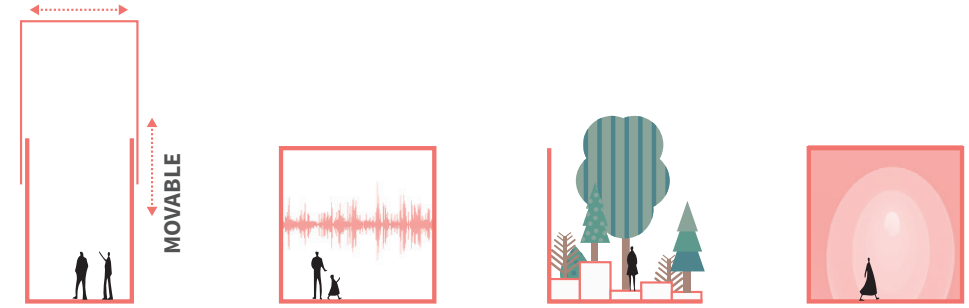


FIG. 5.22 FOUR ELEMENTS TO EVOKE EMOTIONS
SOURCE:BY THE AUTHOR

OBJECTS AROUND ENVIRONMENT

In *Atmospheres: Architectural Environments - Surrounding Objects* (2016), Peter Zumthor describes the atmosphere and architecture of the house in his mind. He believes that a building can impress him because of the architectural quality of the building. To love a thing is to have emotions, and the emotions of architecture are spread by experience, and the appreciation of things depends on emotional reactions. In Zumthor's book, he describes his understanding of the architectural atmosphere. He believes that the building's body, materials, sound, temperature, tension, light, surrounding environment and form can affect the architectural atmosphere.[13]

Here I have only selected four detailed(FIG. 5.22) descriptions of the elements that awaken emotions. Of course, the experience of architecture goes far beyond these four aspects. Any factors such as smell, touch, temperature, even gravity can evoke emotional reactions.

13 ZUMTHOR, Peter., 2006. Atmospheres : architectural environments, surrounding objects. Birkhäuser. ISBN 3764374950.

5.31 LIGHT

We eat light, drink it in through our skins. With a little more exposure to light, you feel part of things physically. I like feeling the power of light and space physically because then you can order it materially. Seeing is a very sensuous act-there's a sweet deliciousness to feeling yourself see something.[14]

-James Turrell

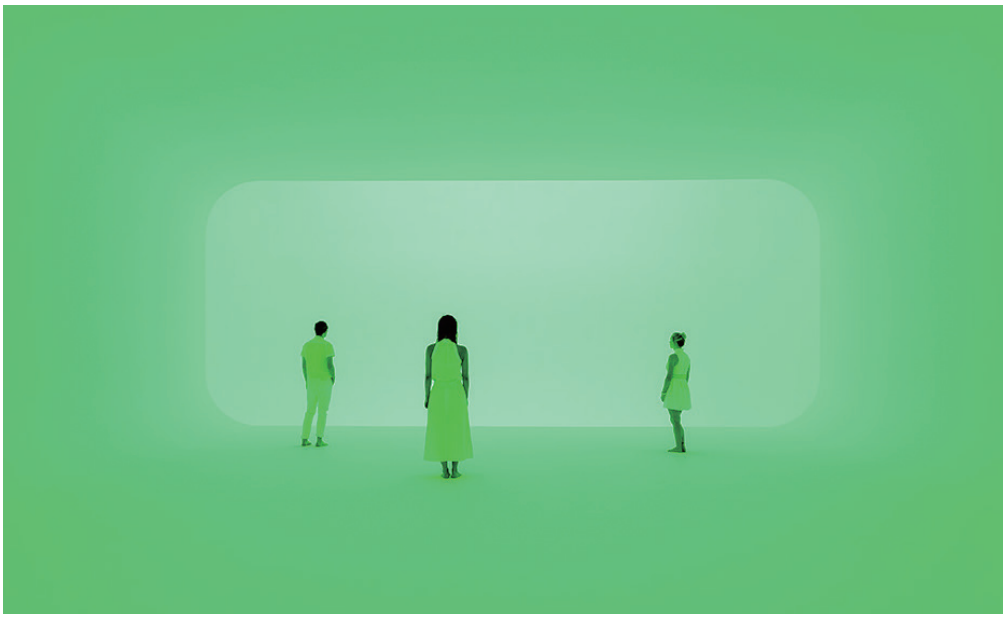


FIG. 5.23 VIRTUALITY SQUARED 2014
SOURCE:BY JAMES TURRELL

Light is an architectural language that describes the architect's design philosophy and artistic pursuits; light is a design tool, but also building material. Light is physically bright and comfortable for the building; great architecture can always make good use of light and shadow to create the atmosphere.

14 About James Turrell - Loves Domusweb, [no date]. [online].

Black: serious, distinctive, elegant, bold, powerful, sophisticated, expensive, night, death

Dark Grey: conservative, classic, responsible, dull, somberness, authority,

Light Grey: neutral, logical, rich, practical, reserved, trust

Blue: authority, nautical, dignity, security, confident, classic, stability, trust

Light Blue: calming, patient, cool, water, contentment, trusting

Teal: serene, sophisticated, water, coolness

Green: healthy, fertile, freshness, environmentally conscious, nature, reliable, appetite

Light Green: calm, soothing, refreshing, young

Yellow: youth, friendly, positive feelings, sunshine, surprise, cowardice, energetic, caution

Orange: fun, cheeriness, sunset, exuberance, spontaneous, optimistic, speed

Amber/Gold: history, autumn, earthiness, richness, tradition, conservative

Brown: earthy, wholesome, delicious, rich, rustic, warm, natural

Dark Red: rich, refined, tasty, expensive, luxurious

Red: aggressiveness, passionate, sexy, strength, powerful, assertive, vitality, fear, speed, danger

Hot Pink: exciting, playful, tropical, flirtatious

Light Pink: romantic, sweet tasting, femininity, innocence, softness, youthful

Purple: sophistication, mysterious, spirituality, dramatic, wealth, royalty, youth, creative

Light Purple: romantic, sentimental, nostalgic, fragrant

Ivory/Cream: classic, soft, comforting, natural, smooth

White: purity, truthfulness, faith, pristine, contemporary, refined, airy

Silver Metallic: sleek, modern, classy

Gold Metallic: rich, expensive, valuable, prestigious

FIG. 5.24 MEANING OF COLOUR
SOURCE:XTREMEBRANDMAKEOVER.COM

Children's Associations of Colors and Emotions

Color	Emotional association						Total
	Happy	Strong	Excited	Sad	Angry	Boring	
Pink							
n	36	6	15	8	3	14	82
%	44	7	18	10	4	17	10
Red							
n	36	19	25	6	9	6	101
%	35	19	25	6	9	6	12
Yellow							
n	31	15	24	6	7	7	90
%	34	17	26	7	8	8	11
Blue							
n	32	22	19	5	9	6	93
%	35	24	20	5	10	6	11
Purple							
n	37	17	16	4	11	10	95
%	39	18	17	4	11	11	11
Green							
n	30	22	23	7	8	8	98
%	31	22	23	7	8	8	12
Brown							
n	18	20	15	13	10	13	89
%	20	22	17	15	11	15	11
Black							
n	19	14	15	15	23	9	95
%	20	15	16	16	24	9	11
Gray							
n	19	9	16	18	13	11	86
%	22	10	19	21	15	13	10
Total							
n	258	144	168	82	93	84	829
%	31	17	20	10	11	10	99

FIG. 5.25 CHILDREN`S ASSOCIATIONS OF COLORS AND EMOTIONS
SOURCE:BY BOYATZIS, C. J., & VARGHESE, R

MEANING OF COLOUR

Light has many properties, and if applied in architectural design, we can extract its two characteristics — the color and the brightness of light. Colors come from the light. Without the light, there is no color. Light is a necessary condition for people to perceive color. Colors are the result of perception. Before Newton, many people knew the dispersion of the sun through the prism, but it was Newton's decision that white light was composed of different monochromatic lights in a particular proportion. Before Newton's dispersion experiment, people thought that white light is a kind of clear light, but white light contains a variety of light with a wavelength of 312-745nm. So before understanding the effects of light on our emotions, we can try to understand the meaning of the various colors(FIG. 5.24), The significance of these colors has a guiding effect on our design.

In the children's coloring experiment,

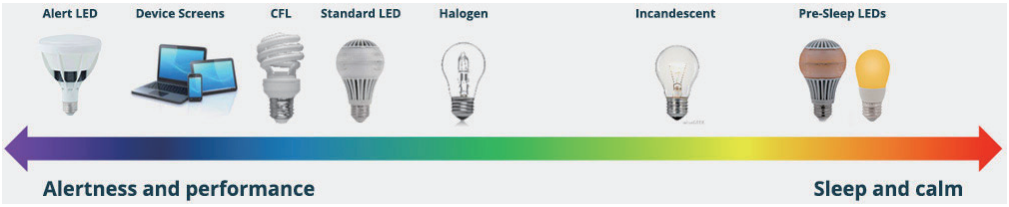


FIG. 5.26 ALERTNESS AND PERFORMANCE
SOURCE:WWW.HEALTHIMPACTOFLIGHT.COM

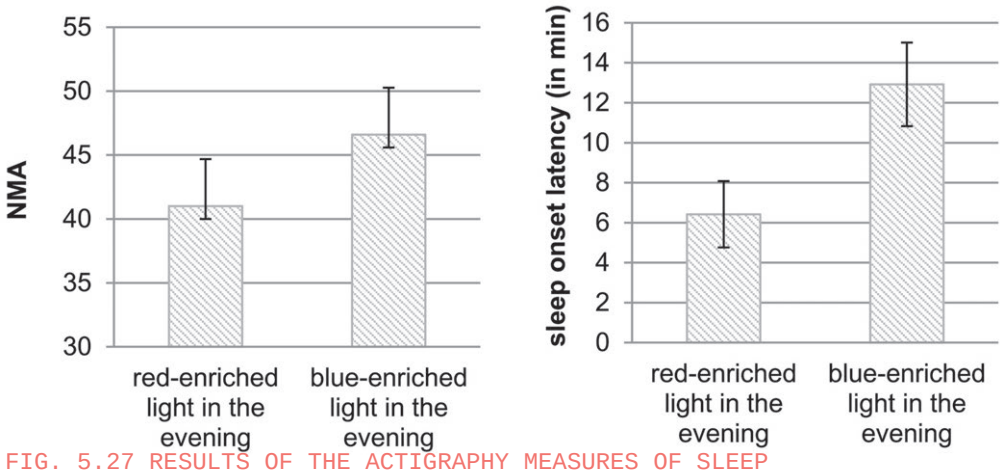


FIG. 5.27 RESULTS OF THE ACTIGRAPHY MEASURES OF SLEEP
SOURCE:STUDER, P., BRUCKER, J. M., HAAG, C., VAN DOREN, J., MOLL, G. H., HEINRICH, H., & KRATZ, O

Boyatzis, C. J., & Varghese, R. (1994)[15] found that when children listened to a sad story, they used more brown crayon, and when they heard a happy story, they used it more shallowly colored yellow crayon. Moreover, the study data showed that 69%(FIG. 5.25) of the high proportions associated positive emotions with bright colors. The dark color is more used to express negative emotions.

WHICH LIGHT IS BETTER

Another experiment done by Studer, P1. Differential effects of blue- and red- enriched light on attention and sleep have been primarily described in terms of adults.In their cross-over study in typically developing adolescents (11–17 years old), they found attention enhancing effects of blue- compared to red- enriched light in the morning (high intensity of ca. 1000 lx, short duration:<1 h) in two of three attention tasks:e.g. better performance in math tests and reduced reaction time variability in a computerized attention test. In their preliminary study, sleep activity measurements measured a slight benefit of red compared to nighttime blue light(FIG. 5.27) [16]: color

15 BOYATZIS, Chris J. and VARGHESE, Reenu, 1994. Children's Emotional Associations with Colors. The Journal of Genetic Psychology [online]. March 1994. Vol. 155, no. 1, p. 77–85. [Viewed 24 June 2019]. DOI 10.1080/00221325.1994.9914760.

16 STUDER, Petra, BRUCKER, Judith M., HAAG, Cornelia, VAN DOREN, Jessica, MOLL, Gunther H., HEINRICH, Hartmut and KRATZ, Oliver, 2019. Effects of blue- and red-enriched light on attention and sleep in

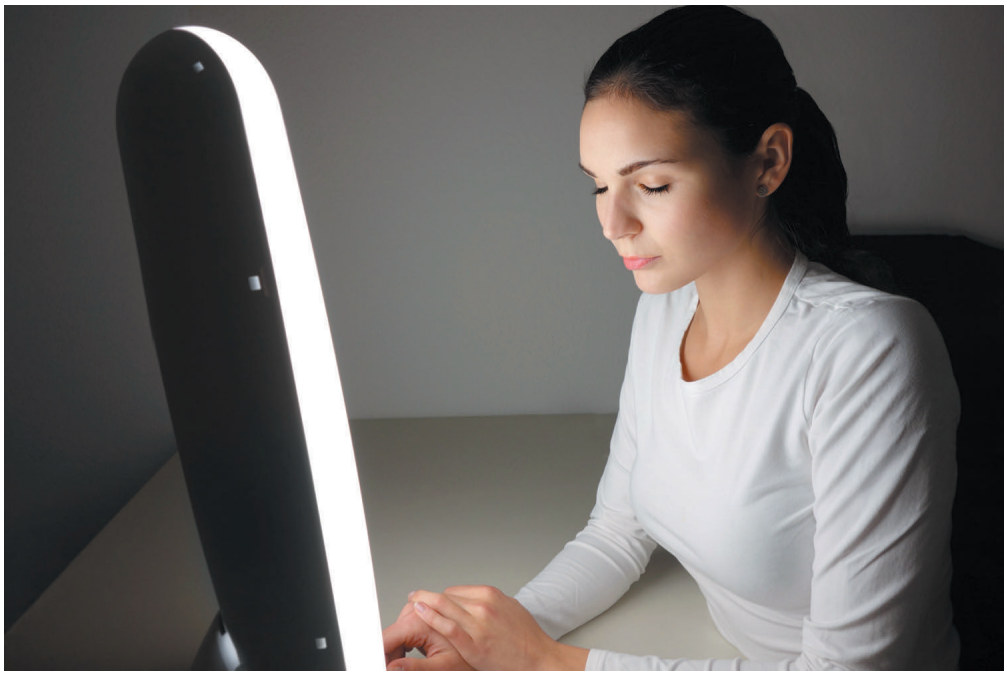


FIG. 5.28 BRIGHT LIGHT HELPS DEPRESSION
SOURCE: FANCYNEWME.COM

temperature, or the color of the light, has a direct impact on people, such as the cell phone we are promoting now. Technology is to prevent us from taking too much blue light because we usually use too many LED devices.

HEALING BY NATURAL LIGHT

We know Bright light is an effective treatment for seasonal affective disorder, a rare mild winter depression. Bright light has been used as an adjunct to other types of pharmacological treatment of depression. According to the Center for Environmental Therapeutics, using 10,000 lux of illumination light box involves sitting in front of it for a specified period of time(30-90min) with your eyes staring at it, people will generally start to feel more better about in the following four days. In Beauchemin, K. M., & Hays, P. (1996) Research[17], the rooms in their psychiatric inpatient unit are so placed that half are bright and sunny and the rest are not. Reasoning that some patients were getting light therapy inadvertently, they compared the lengths of stay of depressed patients in sunny rooms with those of patients in dull rooms. Those in sunny rooms had an average stay of 16.9 days compared to 19.5 days for those in dull rooms, a difference of 2.6 days (15%)$P < 0.05$. So there are also some natural light lamps designed for depression.(FIG. 5.28)

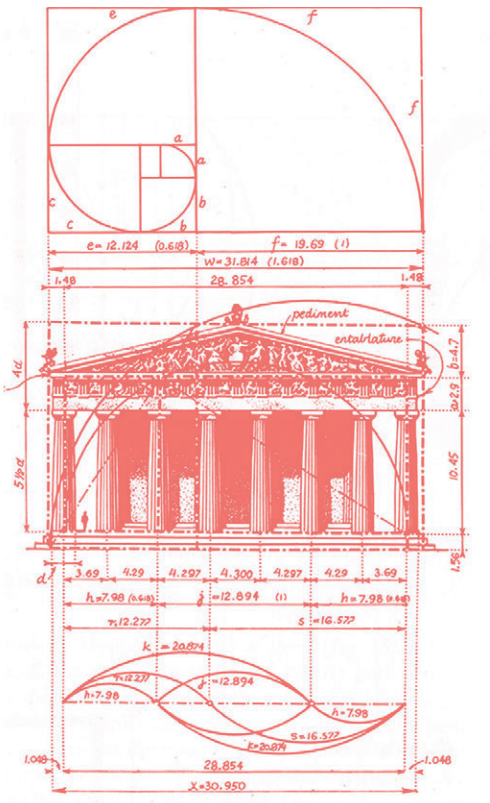
typically developing adolescents. Physiology & Behavior [online]. 1 February 2019. Vol. 199, p. 11–19. [Viewed 7 June 2019]. DOI 10.1016/J.PHYSBEH.2018.10.015

17 BEAUCHEMIN, Kathleen M and HAYS, Peter, 1996. Sunny hospital rooms expedite recovery from severe and refractory depressions. Journal of Affective Disorders [online]. 9 September 1996. Vol. 40, no. 1–2, p. 49–51. [Viewed 6 June 2019]. DOI 10.1016/0165-0327(96)00040-7.

5.32 PROPORTION

PEOPLE AS A RULER

The proportion of plastic art refers to the relationship between the whole and the part of the model, entirety and environment. While addressing the relationship between them, architects and sculptors must also face the role of the proportion and a sense of scale(FIG. 5.29). Since ancient, people have highly praised the concept of proportionality in architecture. Vitruvius, a famous architectural theorist in Ancient Rome, pointed out in *The Ten Books On Architecture* "The design of a temple depends on symmetry, the principles of which must be most carefully observed by the architect. They are due to proportion, "ἀναλογία" in Greek. Proportion is a correspondence among the measures of the members of an entire work, and of the whole to a certain part selected as standard. Without symmetry and proportion there can be no principles in the design of any temple; that is, if there is no precise relation between its members, as in the case of those of a well-shaped man."[18] In ancient Rome, the scale was



18 VITRUVIUS POLLIO. and MORGAN, M. H. (Morris Hicky), 1960. Vitruvius : the ten books on architecture.

seen as a unique feature that seemed to be required by the building instinct. The scale of architecture mainly refers to the feelings that people bring to the entity building. It is established in the correspondence and contrast between the subject and the object. The proportion is for people, people like a real ruler. It is appropriate to produce a pleasant architectural form that fits the physical and psychological needs of the person. Moderately reflected through the volume of the building and create a harmonious exterior space. Generally, the architectural form for satisfying can be peaceful; it is a physiological satisfying need of human by a pleasant sense of scale. The sense of natural scale means that the architectural form is easy and accessible, and it is biased towards practicality and rationality. The sense of scale of the monks comes from the magnificent or sturdy architectural form, which usually appears in monumental, religious and official buildings(FIG. 5.30). It excites people's sense of sublimity with its exaggerated scale.

As a container for people, the architectural space - the roof, the wall, and the ground - have both the functional requirements and the spiritual requirements for the architectural space. From a spiritual point of view, the difference in spatial proportion can create different environmental atmospheres, such as the living space in the house. It is a tiny space with a small area and a little number of private spaces, which can

FIG. 5.30 NAVE AND APSE OF BEAUVAIS CATHEDRAL, FRANCE SOURCE:GOTHIC-CATHEDRAL.WEEBLY.COM

create a kind and quiet atmosphere. There are some churches, such as a Gothic church, where the height of the interior space is much longer than the width of the plane, and the height is much higher than the normal height. This practice will create an upward atmosphere in the interior space of the church, forming a mysterious religious atmosphere, giving people a psychological shock, which is also the spiritual requirements of space for people.

Therefore, the determination of the scale of a space is determined from the aspects of its functional and spiritual requirements. Sometimes the

Dover Publications. ISBN 9780486206455.

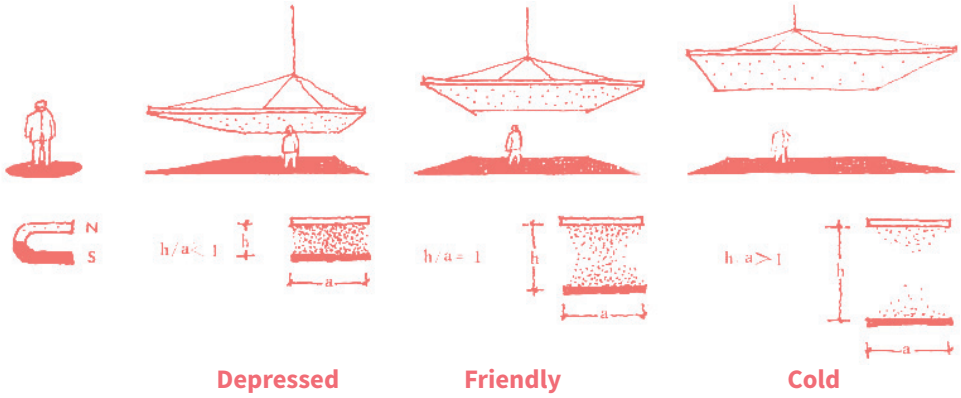


FIG. 5.31 HEIGHT AND SENSATION
SOURCE:BY YIGANG PENG,COMBINATORIAL THEORY OF ARCHITECTURAL SPACE

function is dominant and sometimes the spiritual level occupies a higher position. In terms of the impact of spatial scale on people, people mainly from two aspects. Feeling the space, that is, the depth of the horizontal and the height of the vertical; in terms of height, the feeling of height is divided into two types: relative height and absolute height; absolute height is the actual height, and the relative height is the feeling of the actual height relative to the length and width of the plane. When the height is fixed, as the area increases, the sense of relative height will decrease, and the feeling will be more and more depressed. Similarly, maintain height invariable when in a large space, plane area decreases can make relative height appears taller, give people a feeling cold feeling. In the same way, the height change when the depth of the plane is fixed will also cause people to change the sense of the width.[19] (FIG. 5.31)

19 PENG, Yigang. and 彭一刚., 2008. Jian zhu kong jian zu he lun [online]. Zhongguo jian zhu gong ye chu ban she. [Viewed 24 June 2019]. ISBN 7112100321.

5.33 NATURAL

FIG. 5.32 THE LANDSCAPE THERAPEUTIC PARK IN BRILON
SOURCE:PHOTO BY CLAUDIA DREYSSE

NATURE RELAXES US

Ulrich (1991) found that viewing natural landscapes can effectively release stress, and the environment with natural elements can help people relieve stress more quickly than the environment lacking natural features (Architecture environment) (Lohr et al., 1996; Raanaas el al., 2010). Watching plants or natural landscapes plays a positive role in relieving mental fatigue(Shibata & Suzuki, 2001). Studies have shown that viewing nature or plants helps people to alleviate mental fatigue or stress (Field et al., 1998; Hartig et al., 1991) Chang & Chen (2005) compared to working scenes with or without window views or indoor plants. When the subjects were observed pictures with windows or with plants in the room, their nervousness and anxiety decreased significantly. Many research pages show that indoor plants or views from Windows help reduce stress and anxiety (Field et al., 1998; Field, 2000; Kaplan, 1995; Shin, 2007)

	Quietness	Happy	Excitement	Nervous	Sadness
Red	98	414	153	30	5
Pink	132	340	131	79	18
Orange	187	305	80	83	45
Yellow	217	359	53	51	20
Green	176	119	96	121	118
purple	401	145	69	58	27
white	252	162	128	89	69

FIG. 5.33 THE EMOTION CHOICE RESULTE OF EMPLOYEE AFTER VIEWING PLANT PICTURES
SOURCE:COURTESY OF XIA LI

Different from the sound or the light, Multiple experiments have shown that the vegetation landscape has more positive impact on emotions. It helps people to have a happy mood and maintain a good attitude, eliminating grief, anxiety and depression. Ulrich's (1995) stress recovery study showed that the natural environment not only reduces negative emotions such as stress, anxiety, and panic, but also effectively promotes positive emotions such as happiness and friendliness.

Li Xia(2012) made an experiment about the landscape in the office environment shows red flower plants not only make some staff feel happy and excited but also cause nervous emotions of the staff. Therefore, it is not recommended to use red flower plants excessively in the office environment. Pink flower plants will make some staff happy on the one hand, but it will also cause some staff to have sad emotions. The application should consider the positive and negative emotional effects of pink on the staff; the orange and yellow plants bring happiness and calm to the staff. It is recommended to use orange and yellow plants to decorate the office in order to improve the enthusiasm and efficiency of the staff; it is recommended to choose green foliage plants. They can beautify the office and create a relaxing and pleasant atmosphere; white flowers can bring calm and happy mood to the staff, recommended for office staff to ease staff pressure.[20](FIG. 5.33)

20 Xia li,2012,THE EMOTION CHOICE RESULTE OF EMPLOYEE AFTER VIEWING PLANT PICTURES[online]. TU986.1[Viewed 7 June 2019];Available to: <http://cdmd.cnki.com.cn/Article/CDMD-10022-1012348877.htm>

5.34 AUDIO

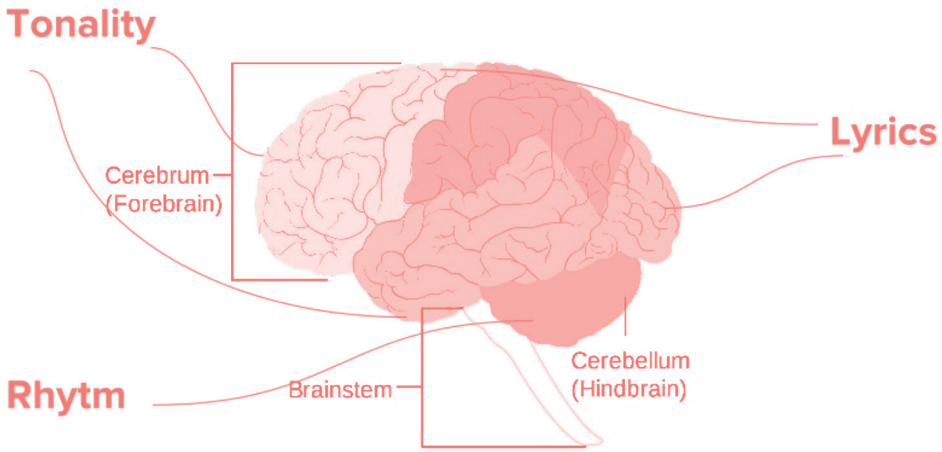


FIG. 5.34 PARTS OF THE BRAIN AFFECTED BY MUSIC
SOURCE:WWW.MENTAL-WAVES-FOR-HAPPINESS.COM

Audio experience, compared with visual experience, the auditory experience is closer to touch. Sounds come from the acceptance of external sound waves. The auditory experience relationship is different from the visual. The sound experience is more certain under certain circumstances. It is easy to cause emotional fluctuations, such as loneliness, contemplation, trouble, and happiness. In a void space, some sounds with a fixed frequency tend to emphasize the silence of the Music is usually used for various emotion adjustments and arousals. For example, in the courtyard, we would sing together. In celebrations, weddings, even the face of losing, being alone or encountering the need for the understanding and acceptance of others, we often choose music to adjust our emotions. In medicine, music is also used in the treatment of anxiety, depression, and painful diseases.

Some industrial products had high

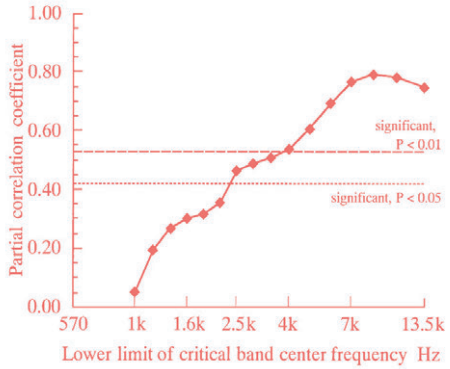


FIG. 5.35 CONTRIBUTION OF HIGH-FREQUENCY COMPONENT ON ANNOYANCE SOURCE:COURTESY OF ISHIYAMA, T.

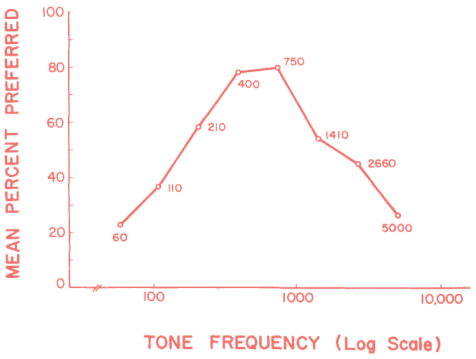


FIG. 5.36 PREFERENCE FOR TONES AS A FUNCTION OF TONE FREQUENCY (HERTZ) SOURCE:COURTESY OF VITZ, P. C.

requirements for sound quality (such as automobile and environmental noise, etc.). The research on sound-induced emotions mainly focused on the relationship between physical and psychological acoustic factors and "annoyance degree"(FIG. 5.37). The results showed that the subjective annoyance degree is related to the equivalent continuous A-weighting sound such as social life noise, and the psychoacoustic quantity such as LAeq, sharpness and roughness.[21] Ishiyama analyzed the impact of road traffic noise on subjective annoyance and established an annoyance evaluation model by using multiple linear regression. Independent variables included roughness, LAeq, sharpness and equivalent continuous A-weighting sound. When equivalent continuous A-weighting sound is equal, the higher proportion of high- frequency noise sample cost higher annoyance.[22](FIG. 5.35)

Vitz used the pairwise comparison method to evaluate the pure tone of different frequencies. The results showed that the pure tone with a frequency of 400-750hz had the highest pleasure degree; Exposed to pure tones at the same frequency with different intensity (40-90db),50dB pure tones had the highest pleasure degree. When pure tone with the same loudness (50dB) was exposed, pure tone with the frequency of 200-1000hz has greater pleasure degree.[23](FIG.

21 GUSKI, Rainer, [no date]. Psychological Methods for Evaluating Sound Quality and Assessing Acoustic Information. [online]. [Viewed 25 June 2019]. Available from: https://www.ingentaconnect.com/content/dav/aaua/1997/00000083/00000005/art00007?crawler=true

22 ISHIYAMA, T, 2000. THE IMPACT OF SOUND QUALITY ON ANNOYANCE CAUSED BY ROAD TRAFFIC NOISE: AN INFLUENCE OF FREQUENCY SPECTRA ON ANNOYANCE. JSAE REVIEW [ONLINE]. APRIL 2000. VOL. 21, NO. 2, P. 225–230. [VIEWED 15 JUNE 2019]. DOI 10.1016/S0389-4304(99)00090-9

23 VITZ, PAUL C., 1972. PREFERENCE FOR TONES AS A FUNCTION OF FREQUENCY (HERTZ) AND INTENSITY (DECIBELS).

DECIBEL	SOUND	EXAMPLE
10	Almost inaudible	A leaf falling
20	Audible	Rustles of autumnal leaves
30	Very quiet	Whispering
40		Living room, quiet classroom
50	Limited sound	Refrigerator working, car driving past
55		Percolating coffee-maker
60	Audible	Sound of human voice, machinery
70	Irritating	Television set on loud, vacuum cleaner, several people on the telephone
75	Constant sound	Busy restaurant around lunchtime
80	Unpleasant	Alarm clock, freight traffic, doorbell
85	Loud	Sawing, mixer
90	Extremely unpleasant	Truck close by, screaming, yelling, shouting
95	Noisy	Drill, violin
100	Extremely unpleasant	Machine in a factory, compressor, fighter jet at 300 m
105	Even louder	Helicopter close by, large drum
110	Extremely loud	Rock concert, chainsaw
120		Human voice at its loudest, police siren
130		Thunder
140	Pain threshold	First Monday of the month siren from close by
150	Permanent damage to hearing	Fireworks

FIG. 5.37 EXAMPLE OF DECIBELS
SOURCE:WWW.ALPINEHEARINGPROTECTION.CO.UK

5.36)

Expect the light, audio, proportion, vegetation; other factors can arouse people's emotions, such as touch, smell, temperature, humidity, wind etc. It is important to look at the issue of architectural design in many ways and opinion. Don't just focus on the form itself.

PERCEPTION & PSYCHOPHYSICS [ONLINE]. JANUARY 1972. VOL. 11, NO. 1, P. 84–88. [VIEWED 16 JUNE 2019]. DOI 10.3758/BF03212689.

5.4 DESIGN 8:MEASUREMENT SYSTEM

FIG. 5.38 THREE MEASURING TECHNIQUES
SOURCE:BY THE AUTHOR

SET UP A FRAMEWORK

In Design 7, I designed four elements for the pavilion. Then, I consider whether design a pavilion(FIG. 5.40) can be used as a framework to put various items that can evoke the mood of the visitors into the frame. For example, I can change the height of the space, lighting, color, sound, and somatosensory(FIG. 5.39). Because the building itself can act as a frame, and there is a free movement between the spaces. Then I hope to analyze the mood, behavior, and stay time of the visitors through AI camera recognition technology such as face recognition, body recognition, and behavior tracking.(FIG. 5.38)

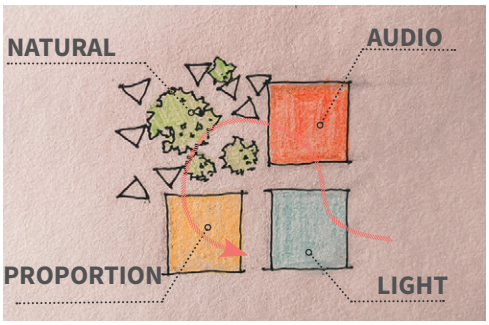


FIG. 5.39 DESIGN 8 CONCEPT
SOURCE:BY THE AUTHOR

FIG. 5.40 DESIGN 8 SKETCH
SOURCE:BY THE AUTHOR

TWENTY-FOUR CIRCULATION POSSIBILITIES

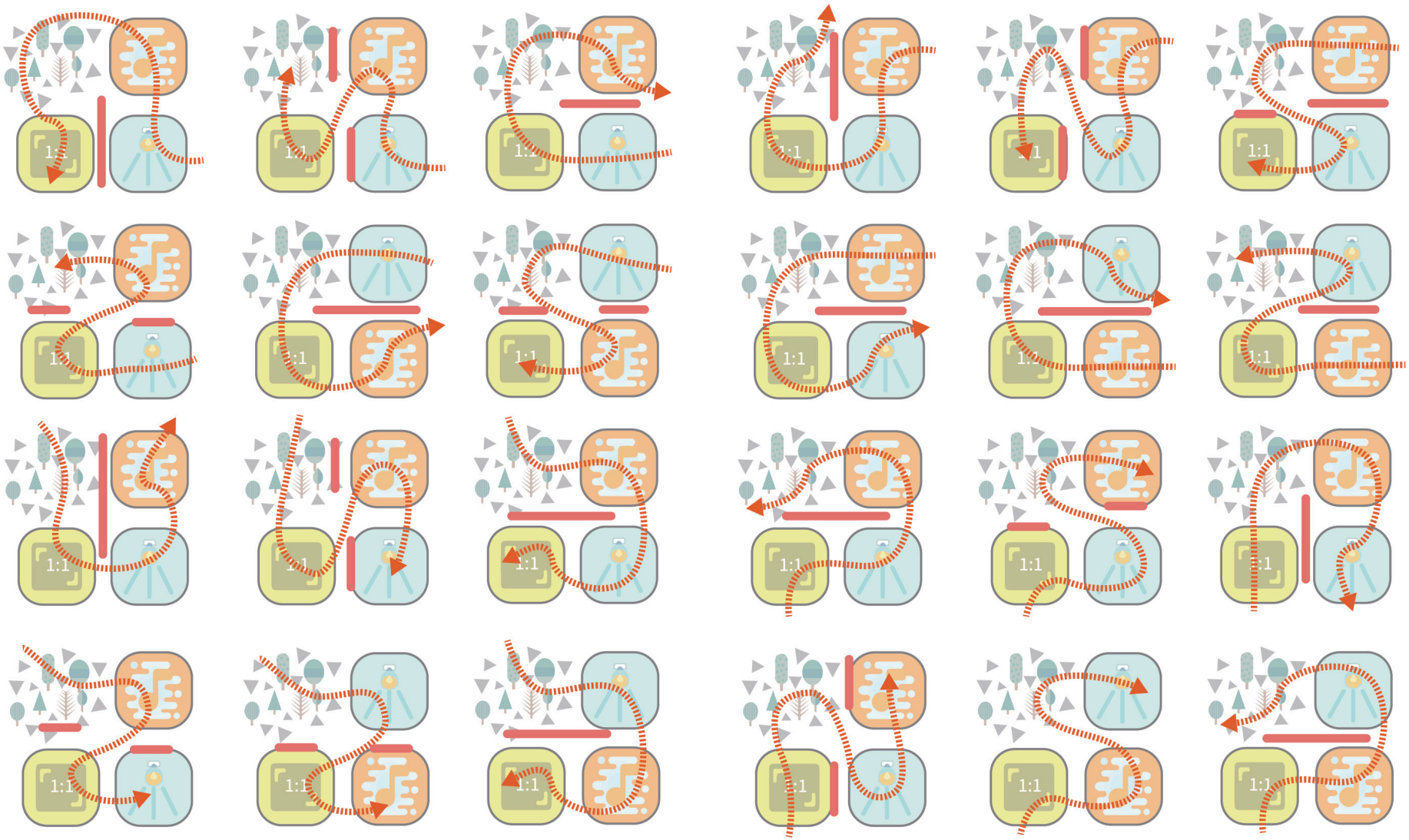


FIG. 5.41 TWENTY-FOUR CIRCULATION POSSIBILITIES
SOURCE:BY THE AUTHOR

5.41 FACE RECOGNITION EMOTIONS

FIG. 5.42 FACE RECOGNITION EMOTIONS
SOURCE:CALCULATED BY MICROSOFT AZURE COGNITIVE

THE EMOTION ON THE FACE

In the beginning, I wanted to measure people's emotions through EEG's technology (Design 0), but I studied the experimental results of some related published articles and found that using EEG equipment to measure emotions is not accurate enough. Not only that, the use of EEG equipment to measure conditions is very demanding. In actual life, emotions cannot always be stable. So using EEG equipment to measure people's emotions in space is more like a self-deception. Abandoning this tool, I started looking for other research methods. Psychologist A. Mehrabia's research shows that in daily communication, the information

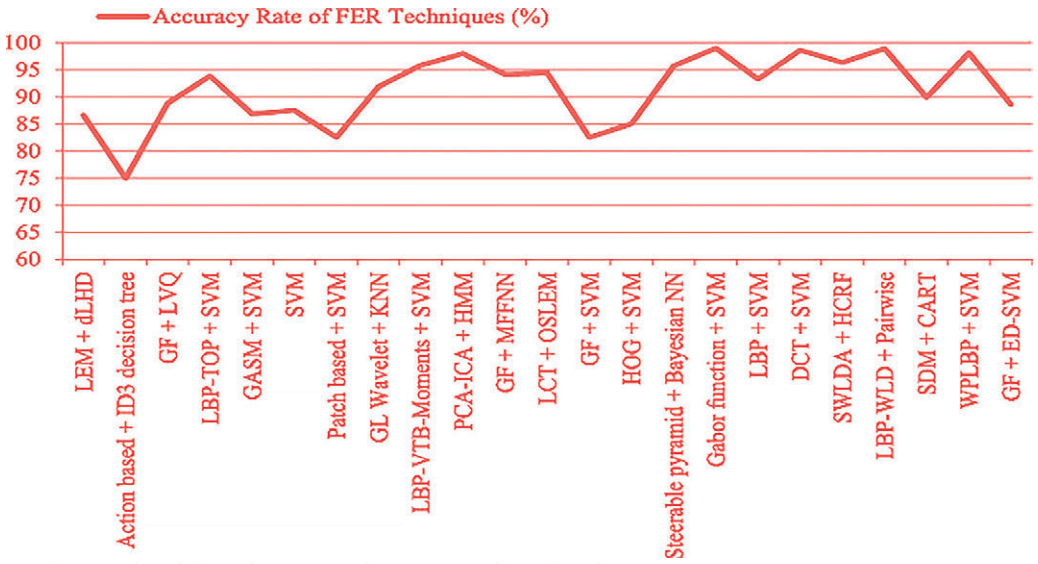


FIG. 5.43 ACCURACY RATE OF FER TECHNIQUES
SOURCE:BY I.MICHAELREVINA

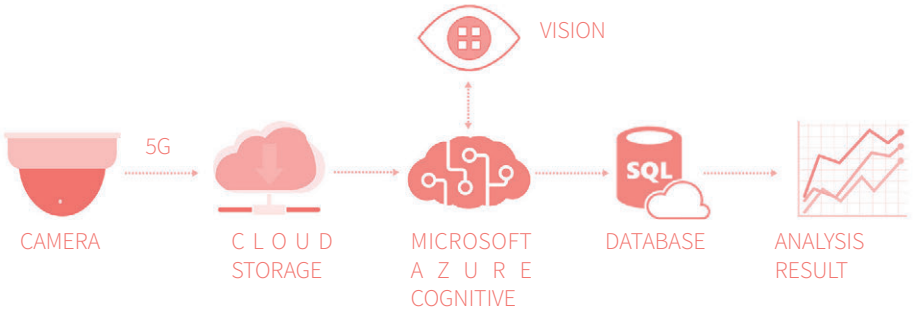


FIG. 5.44 EMOTIONAL MEASUREMENT WORKFLOW
SOURCE:BY THE AUTHOR

transmitted through language only accounts for 7% of the total amount of information, while the information transmitted through facial expressions reaches 55% of the total amount of information. In this way, we use the expression to convey information about our emotions every day and accept the information of other people's emotions. So I thought of using the facial expressions of people to identify the emotions of the visitors. There are at least 21 kinds of human facial expressions, in addition to the 6 normal ones including happiness, surprise, sadness, anger, disgust and fear. Moreover the rest 15 are compound expressions such as surprise (happy + surprised), grief (sad + anger). Now we can use Microsoft Azure's face recognition technology to recognize the above expressions very effectively. Experiments have shown that the accuracy of this facial expression recognition technology is between 75-99%[24].(FIG. 5.43)

24 REVINA, I.Michael and EMMANUEL, W.R. Sam, 2018. A Survey on Human Face Expression Recognition Techniques. Journal of King Saud University - Computer and Information Sciences [online]. 5 September 2018. [Viewed 24 June 2019]. DOI 10.1016/J.

Setting up this system(FIG. 5.44) is also very simple. We only need to set up enough cameras in the pavilion. The data of the camera can be directly transferred to the cloud storage through 5G. The cloud then links the data with Microsoft Azure's face recognition, and we will get processed. Data so that we can browse and get at any terminal.

And these data and video files are real-time. If we want to check the data more carefully, we can click on the data to enter the visitors' video, and their emotional data will appear in real time. (FIG. 5.45)Of course, if privacy and other issues are involved, the face can be mosaicized when the video is saved.

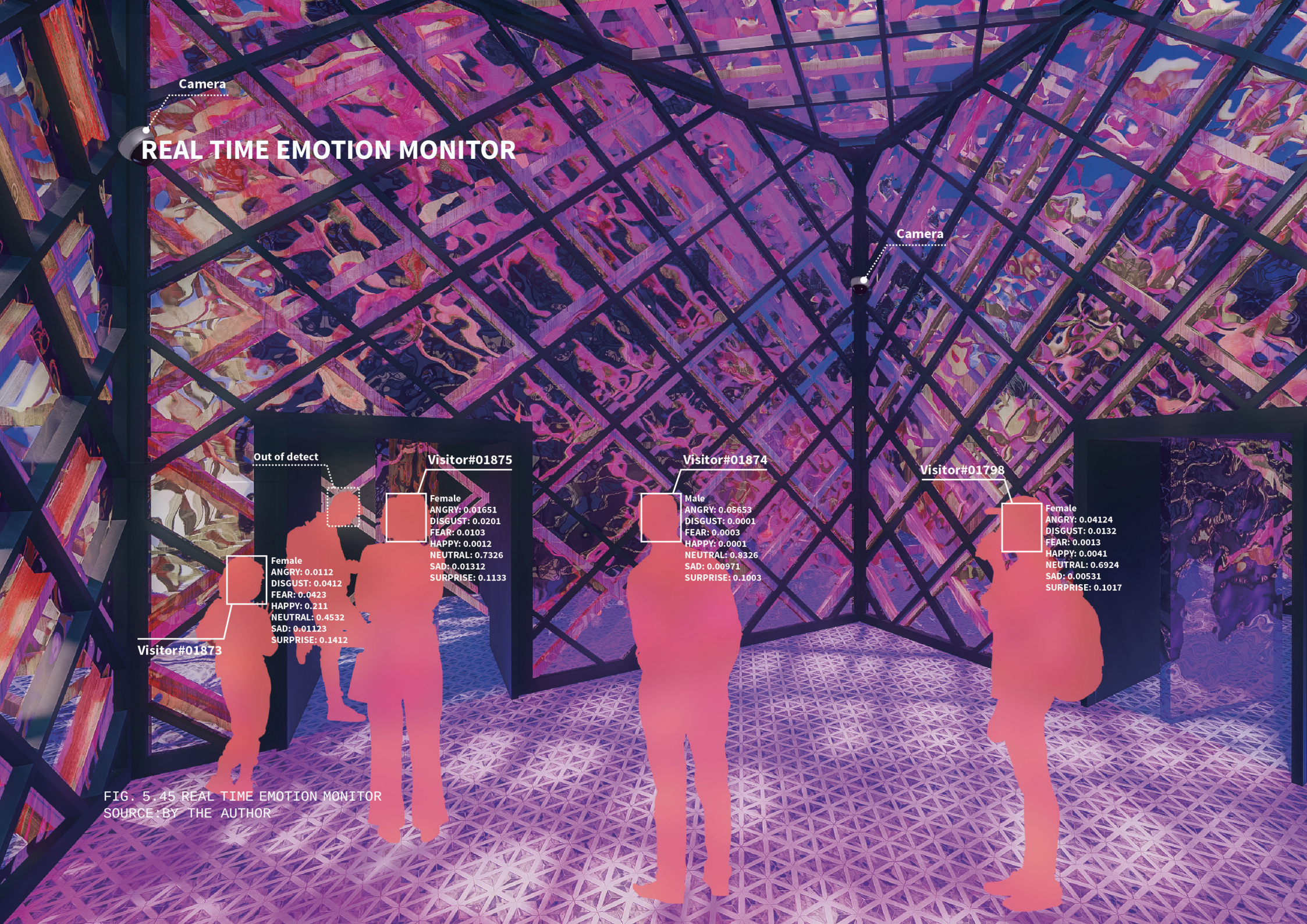


FIG. 5.45 REAL TIME EMOTION MONITOR
SOURCE:BY THE AUTHOR

5.42 BEHAVIOURS TRACKING

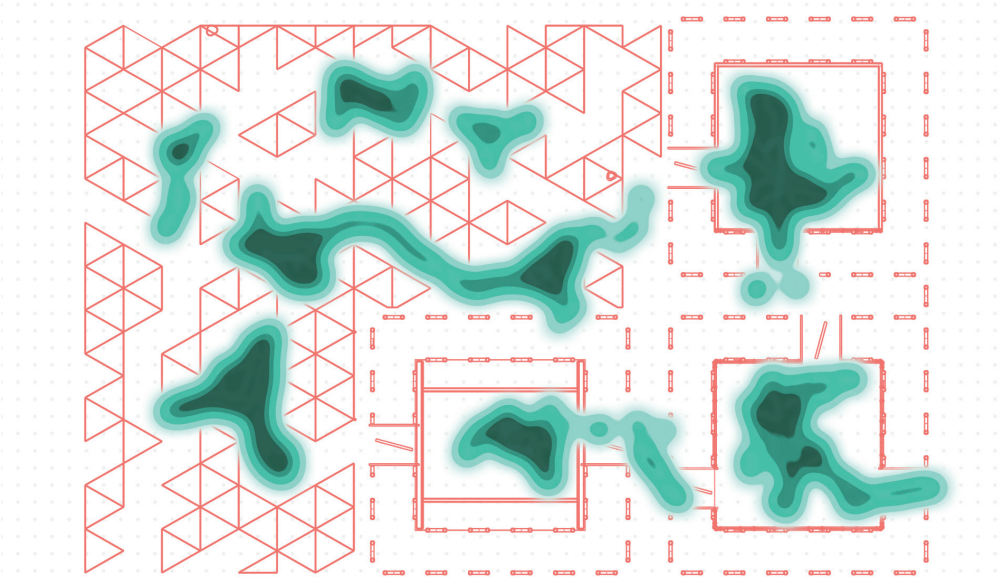


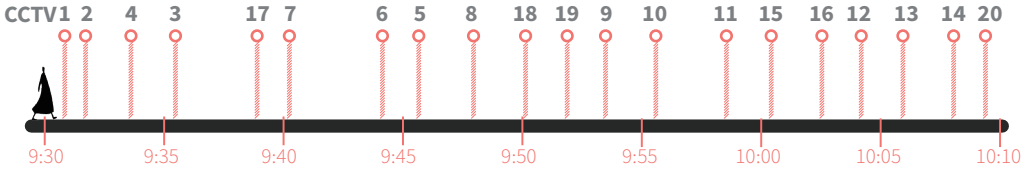
FIG. 5.46 VISITOR TIME&TRACK MAPPING
SOURCE:BY THE AUTHOR

MAPPING BEHAVIOURS

In 1928, Robinson took the lead in observing the behavior of museum visitors. In this observation, tracking tourists is related to circulation. Serrell said in his indicator that although this indicator is very controversial if visitors spend 51% of the time to visit the exhibition[25], the exhibition will be successful. An article (2004) pointed out that under normal circumstances,

JKSUCI.2018.09.002.

25 SERRELL, Beverly, ADAMS, Roxana and SERVICE, American Association of Museums. Technical Information, 1998. Paying attention : visitors and museum exhibitions [online]. American Association of Museums. [Viewed 25 June 2019]. ISBN 0931201462. Available from: https://www.bcin.ca/bcin/detail.app?id=200987



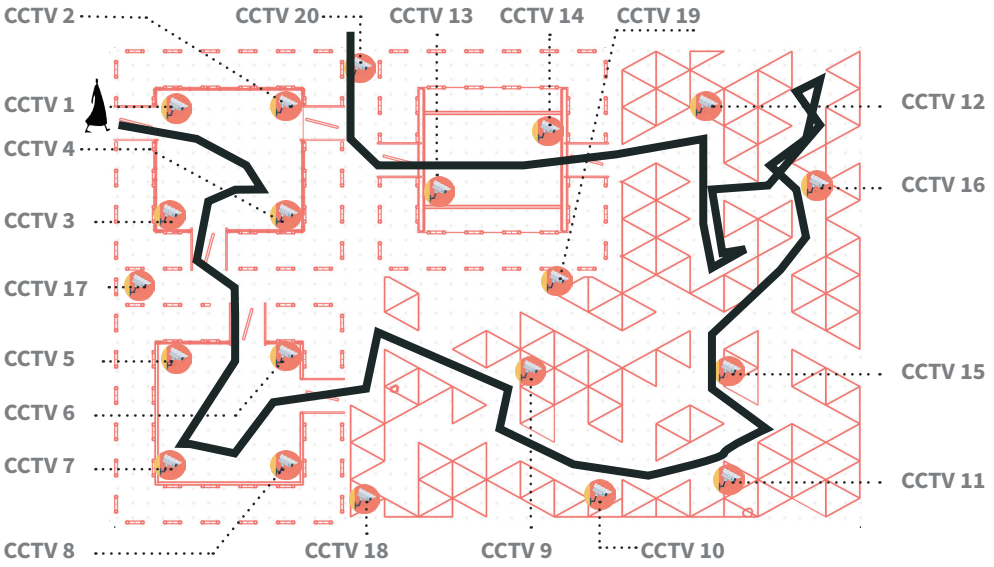


FIG. 5.47 VISITOR TIME&TRACK SYSTEM WITH CAMERA
SOURCE:BY THE AUTHOR

visitors will only spend 20%-40% of the time in the exhibition.[26] However, due to the lack of accurate calculation methods, previous experiments have been controversial. Recent technological advances have enabled us to use video tracking technology to track visitor behavior and tracking.

Thanks to the advancement of the identification system, we can monitor the behavior of visitors through the camera group, such as their staying time in the exhibits(FIG. 5.46), or when they need a rest. In the system I designed, I placed more than 20 cameras that could draw their circulation directly on the plan.

26 ROUNDS, Jay, 2004. Strategies for the Curiosity-Driven Museum Visitor. Curator: The Museum Journal [online]. 1 October 2004. Vol. 47, no. 4, p. 389–412. [Viewed 25 June 2019]. DOI 10.1111/j.2151-6952.2004.tb00135.x. Available from: http://doi.wiley.com/10.1111/j.2151-6952.2004.tb00135.x

5.43 BODY RECOGNITION

FIG. 5.48 EXAMPLE ARTICULATED POSE RECOGNITION
SOURCE:WWW.CLRESEARCH.COM

GESTURE LANGUAGE

We can recognize a person's emotions through language and facial expressions, and we can also regard consider physical movements as a supplementary condition to judge a person's emotional state. We can detect changes in body posture(FIG. 5.48), such as hand movements, shoulders' position, body positioning, and leg movements. If a person crosses his arms, he may be in a defensive state; when a person is happy, his head will be back, but if he is not happy, his head will be forward; if one is in front of the shoulder tilting or leaning down, he may feel disgusting.

Methodology used for coding on movement are: the Bernese system , Laban Movement Analysis (LMA) and Labanotation LMA[27] is the best methodology used for bodily emotion detection.

27 Rosenfeld, H. "Measurement of body motion a and orientation". "In Handbook of methods in non verbal behavior research", K. Scherer and P. Ekman, Eds. Cambridge University Press, 1982, 199–286.

FIG. 5.49 FACIAL EMOTION DETECTION USE IN OTHER MUSEUMS
SOURCE:BY THE AUTHOR

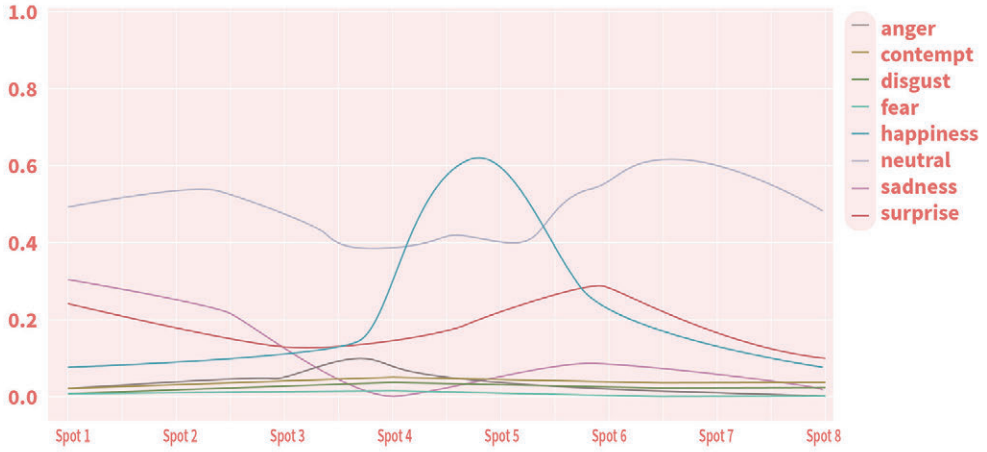


FIG. 5.50 VISITOR EMOTIONS CHART
SOURCE:BY THE AUTHOR

I have drawn some poses for visitors in the museum(FIG. 5.51),. We need to input tens of thousands of gestures into the computer, let the machine learn the meaning of these gestures, and then through the deep learning ability of AI, we can let the computer automatically give us Determine the behavior of the visitor.

APPLY ELSEWHERE

Other museums can also learn from this form of emotional monitoring. Now that 5G technology has emerged, we do not need to build new equipment in the museum.(FIG. 5.49), Just replace the camera and transfer all your data to the cloud. In this way, we can easily get analytics data on any terminal. This way, even on mobile phones, we can extract personal visitor data(FIG. 5.50), or analyze gender, age and other categories based on artificial intelligence techniques. The data extracted from the visitors not only helps to improve the architect's

design level but also helps the museum management and provides some objective reference data for the artist. I do not think that getting data is the end. These studies are just to show that when designing a building, we not only care about the form but also pay attention to many elements in the building space. We should not regard architecture as a sculpture but should connect architecture with people.

MUSEUM VISITOR POSE SKETCH

FIG. 5.51 RMUSEUM VISITOR POSE SKETCH
SOURCE:BY THE AUTHOR

DESIGN 8 DRAWING

FIG. 5.52 DESIGN 8 AXONOMETRIC
SOURCE:BY THE AUTHOR

DESIGN 8 DRAWING

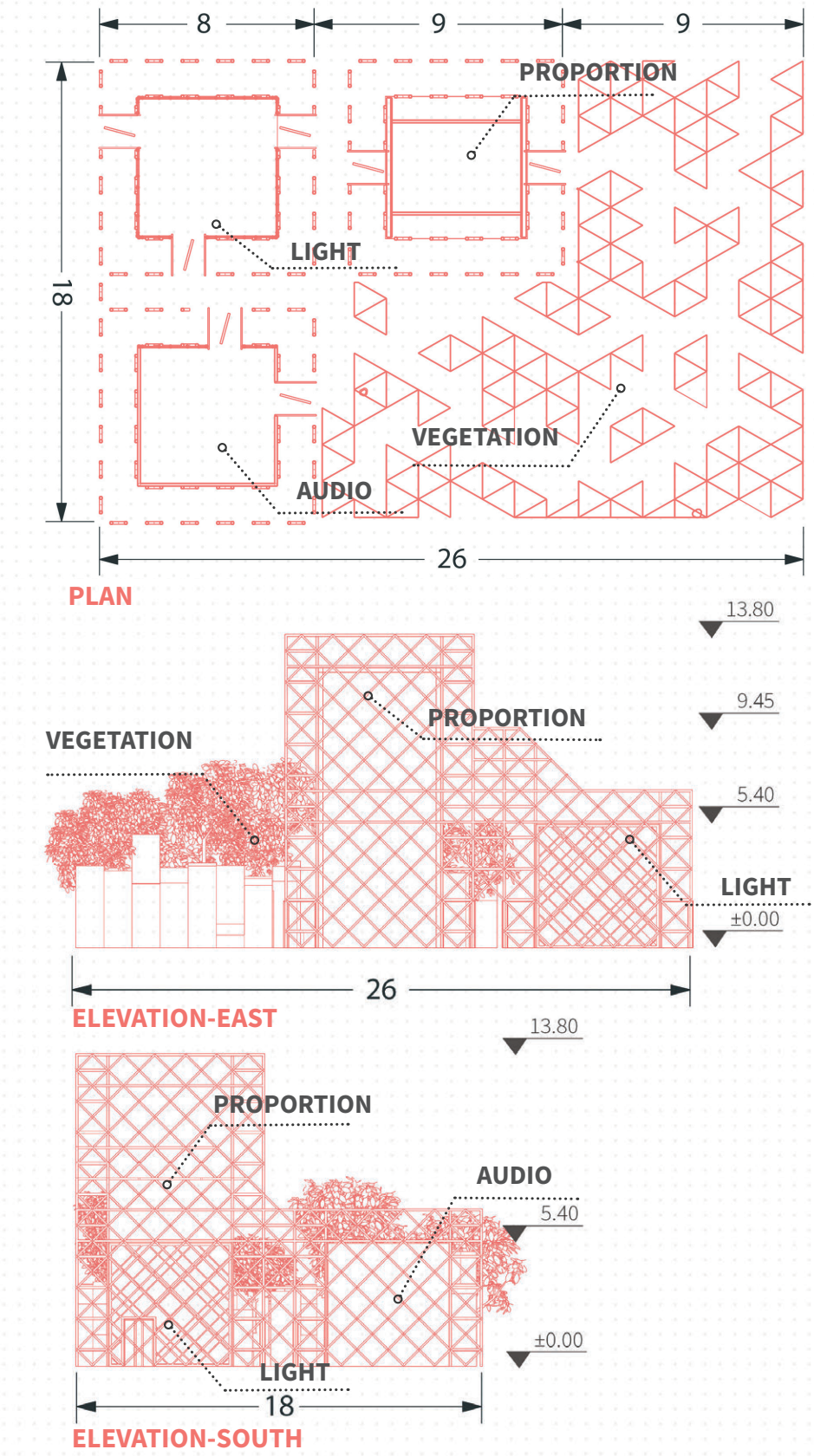


FIG. 5.53 DESIGN 8 DRAWING
SOURCE:BY THE AUTHOR

FIG. 5.54 LIGHT ELEMENTS SPACE
SOURCE:BY THE AUTHOR

DESIGN 8 RENDERING

FIG. 5.55 FRONT ELEVATION
SOURCE:BY THE AUTHOR

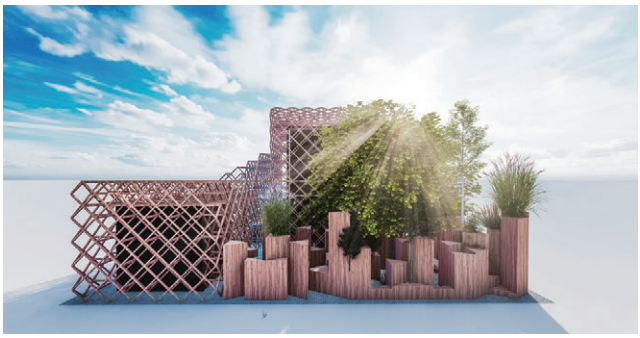


FIG. 5.56 SIDE ELEVATION
SOURCE:BY THE AUTHOR

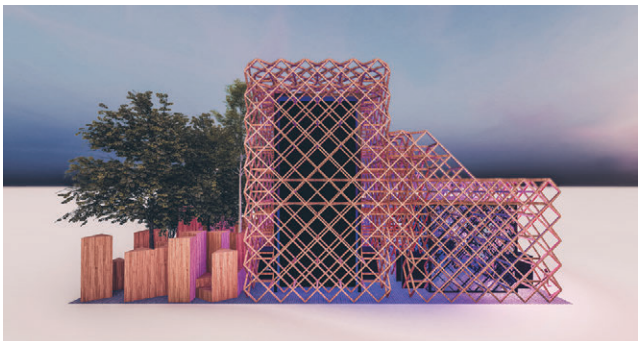


FIG. 5.57 SIDE ELEVATION
SOURCE:BY THE AUTHOR

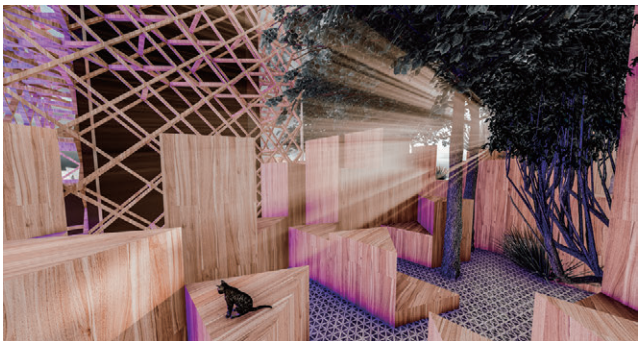


FIG. 5.58 NATURAL VIEW
SOURCE:BY THE AUTHOR

FIG. 5.59 AUDIO
SOURCE:BY THE AUTHOR

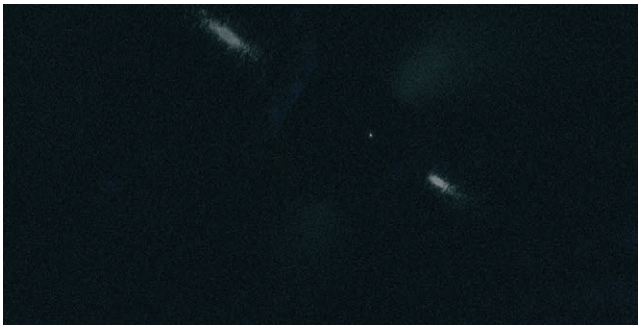


FIG. 5.60 LIGHTLESS
SOURCE:BY THE AUTHOR

FIG. 5.61 LIGHT
SOURCE:BY THE AUTHOR

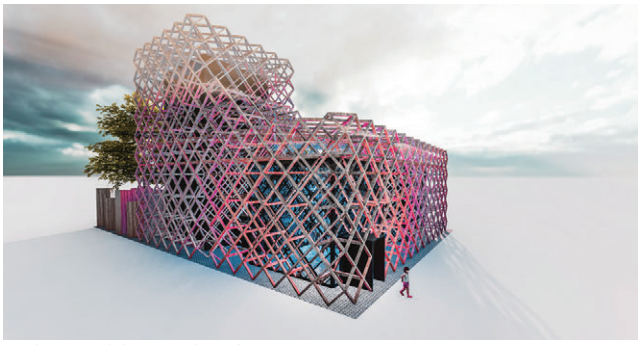


FIG. 5.62 PERSPECTIVE VIEW
SOURCE:BY THE AUTHOR

CAPTURE 6

Conclusions

CONCLUSION

Design techniques and forms are universal, and thinking & emotions are unique. In the context of the global expansion of information, people often solve problems through consultation, but they always forget to explore their connotations. They regard the form as the purpose of design, not to explore the reasons behind it. The means of obtaining information is now increasing, and design materials are continually being updated. Today, with the emergence of new technologies, I need to retain my thinking ability and think deeply about the depth of the architectural space. This paper studies the problems faced by contemporary architectural design and draws the following research results:

PROPOSED SPATIAL SEQUENCE DESIGN STRATEGY GUIDED BY EMOTION

(1)The building is static, but the relationship between people and architecture is dynamic. The connection, transition, and sequence of emotions in the building space are a variable. In the order of design space, in addition to focusing on functions and processes, emotional guidance should also be considered as one of the design considerations.

DEMONSTRATING THE RELATIONSHIP BETWEEN THE EXPERIENCE OF ARCHITECTURE AND THE ELEMENTS OF PERCEPTION

(2)Experience is a psychological phenomenon. The connection between architecture and experience must be accomplished through perception. The related human senses of visions, smells, hearings, touches, tastes and other aspects of human beings are relative to instincts, memories, emotions and imaginations.

CONSTRUCTED A SYSTEM OF ARCHITECTURAL EXPERIENCE MEASUREMENT FRAMEWORK

(3) This article hopes to use AI camera technology and the computer

machine learning ability to identify and analyze people's facial expressions, body movements and behaviors. This approach can effectively help us to obtain data related to visitors' emotions, interests, and concentration as well as provide reliable data support for designers in the experience design.

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